ENGINEERING NEWS-RECORD

Mexico completes rail link with the Pacific p.30

A McGRAW-HILL PUBLICATION

STEVENS RICE GS N
UNIV MICROFILMS INC EDIT
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ANN ARBOR MICH C 4-5

Precision spotting—"Full Feel" hydraulic controls insure easy operation, accurate positioning of dipper . . . minimize spill and chance for damage to haulers. Air trip provides fast, clean dump.

EQUIPMENT: TWO, 4-YD. P&H SHOVELS WITH MAGNETORQUE SWINGERS

ASSIGNMENT: Move 4,100,000 yds.

JOHN ARBORIO, INC., Poughkeepsie, N.Y., working on

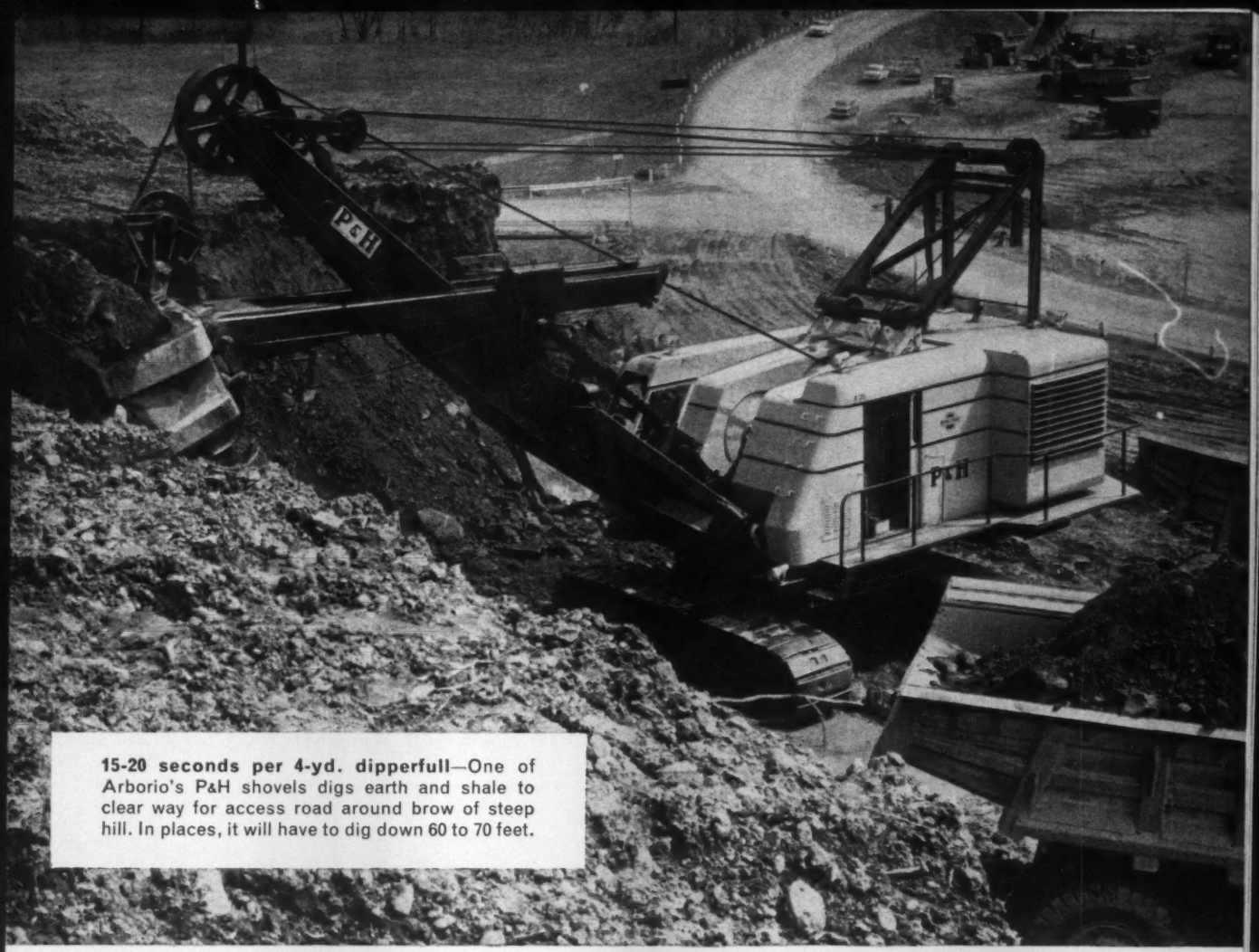
Note the slope—Magnetorque swingers provide good speed and response regardless of swing level, without difficulty, throughout the day. Eliminate need for adjusting or replacing bands or linings, too.

Mr. Al Ricci, project superintendent for Arborio, reports,

"We bought two 4-yd. P&H shovels with Magnetorque swingers in April of '61. They've been assigned to load out 4,100,000 yds.—and do so by February of '62. That means digging an average of 410,000 yds. per month which requires a tremendous hourly production, even on a two-shift basis. Nevertheless, we feel these big P&H shovels will get the job done in time."

Spring on the Job Site Was Hardly "Balmy"

Weather was downright sloppy and wet. At times, State Engineers had to order all digging stopped—and precious days were lost. Often, the footing was very soft. Some days the P&H machines needed to work from spots where they had to swing up or down



15-20 seconds per 4-yd. dipperfull—One of Arborio's P&H shovels digs earth and shale to clear way for access road around brow of steep hill. In places, it will have to dig down 60 to 70 feet.

# of earth and rock in 10 months

relocation of Rt. 17 near East Branch, N.Y.

slopes. Also, the material was unclassified—some is easy-going, some hard rock.

Daily Production: 20,000 Yards

When the two P&H shovels start digging—they really boil out the yardage. Each loads a 25-yd. hauler in only 1½ to 2 minutes. This production—projected over sixteen, 50-minute hours—totals conservatively 20,000 yds. daily for the two machines and other allied equipment. At this rate, in spite of the high production required to finish the job on schedule, there'll be leeway for rain-outs, holidays, etc.

For more information on this job, write for Case History Report No. 156.

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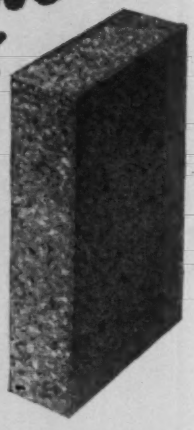

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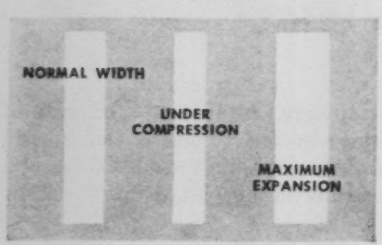

The above illustration shows how this material can expand to as much as 50% of its original thickness.

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ENGINEERING NEWS-RECORD Vol. 167, No. 24, DECEMBER 14, 1961

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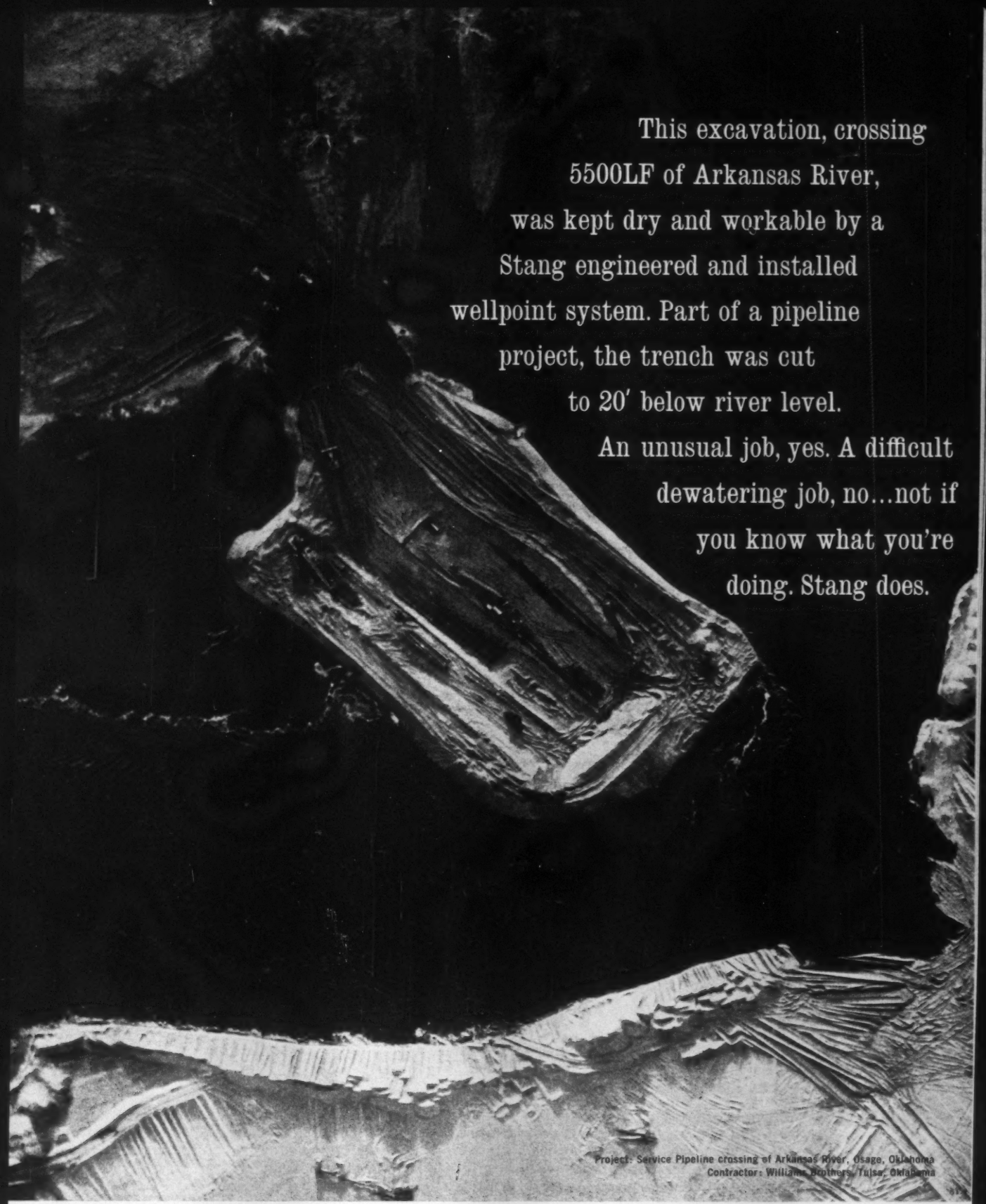

This excavation, crossing
5500LF of Arkansas River,
was kept dry and workable by a
Stang engineered and installed
wellpoint system. Part of a pipeline
project, the trench was cut
to 20′ below river level.
An unusual job, yes. A difficult
dewatering job, no...not if
you know what you're
doing. Stang does.

Project: Service Pipeline crossing of Arkansas River, Osage, Oklahoma
Contractor: Williams Brothers, Tulsa, Oklahoma

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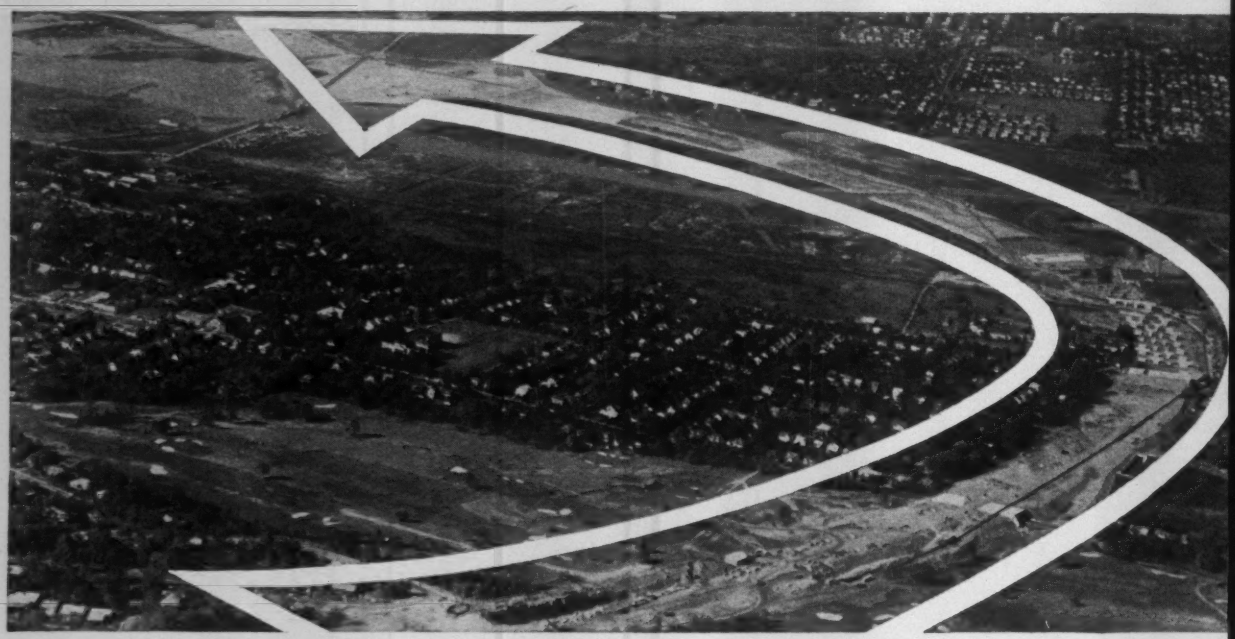
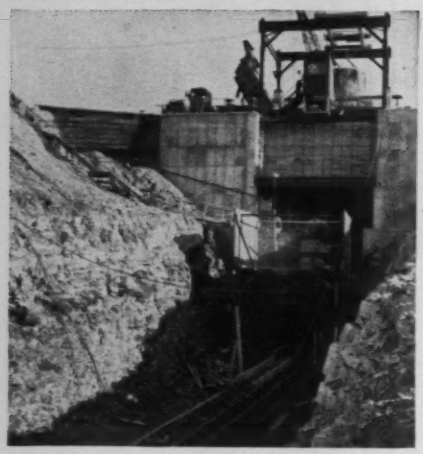
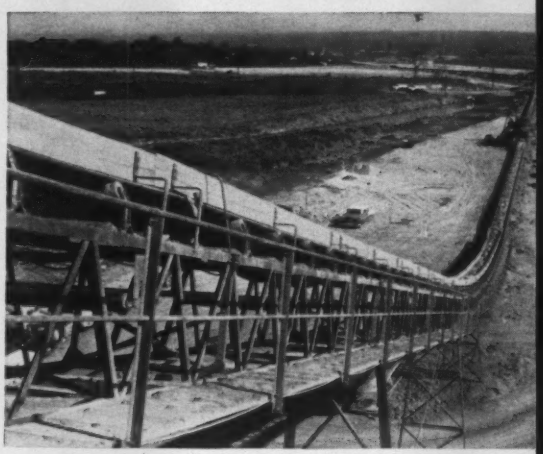




AERIAL VIEW shows entire 11,400′ length of Brewster conveyor system. Note palisade in lower left. Conveyors are along Route 95 right-of-way leading to truck-loading hopper near lake being filled. LEFT, blasted rock is dumped into crusher and material starts on two mile ride over Barber-Greene conveyor system. Last three flights of the ten flight system are shown at right.



BREWSTER MOVES TWO MILES ON BARBER-

Contractor's equipment choice for road job proves more practical, more economical, better public relations

Geo. M. Brewster & Son, Bogota, N. J., generated industry-wide interest by selecting Barber-Greene belt conveyors instead of haul trucks to move 4,000,000 tons of rock two miles from face to fill on a New Jersey interchange construction project.

And with work well underway, this widely known contracting firm is finding it made a wise equipment choice—one that is proving more practical, more economical and far superior from a public relations standpoint.

The Brewster problem: Moving 4,000,000 tons of crushed rock from a rock cut near George Washington Bridge in Leonia, N. J., two miles through a densely populated area to the fill zone—a nine acre dredged lake.

The Brewster solution: A 10-flight Barber-Greene belt conveyor system 11,400′ long that moves rock at up to 2,000 tph and operates 2 shifts daily six days a week. Benefits are less

MOST BLASTED ROCK on conveyor belt dwarfs man's hand shown here. Entire system uses Barber-Greene heavy duty idlers—industry's finest for high capacity, heavy duty service.

END OF THE LINE for conveyor system is this mammoth truck loading hopper under which two haul trucks can be loaded simultaneously for short final trip to nearby fill area.

QUIET ZONE: In photo above rock flows at up to 2,000 tph through Leonia, N. J., on Barber-Greene conveyors with little noise, minimum dust and no traffic danger for residents.

NO TRAFFIC TIEUPS here as rock moves up and over city streets and traffic pattern continues normal in construction area. Imagine this crossing with haul trucks handling the rock.

4,000,000 TONS OF TRAP ROCK GREENE CONVEYOR SYSTEM

operating cost with conveyors, lower maintenance, and reduced manpower needs. And conveyors are moving rock quietly in areas close to schools, hospitals and homes without creating traffic tieups or spilling rock and mud on city streets. Minimum disturbance to the community was a major factor in Brewster's equipment choice. Next time you or your consultants face a bulk materials moving problem, ask for a Barber-Greene belt conveyor comparative quotation from a hard-dollar point of view.

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NOW THEY'RE TRADING SALT FOR SPARKLE...

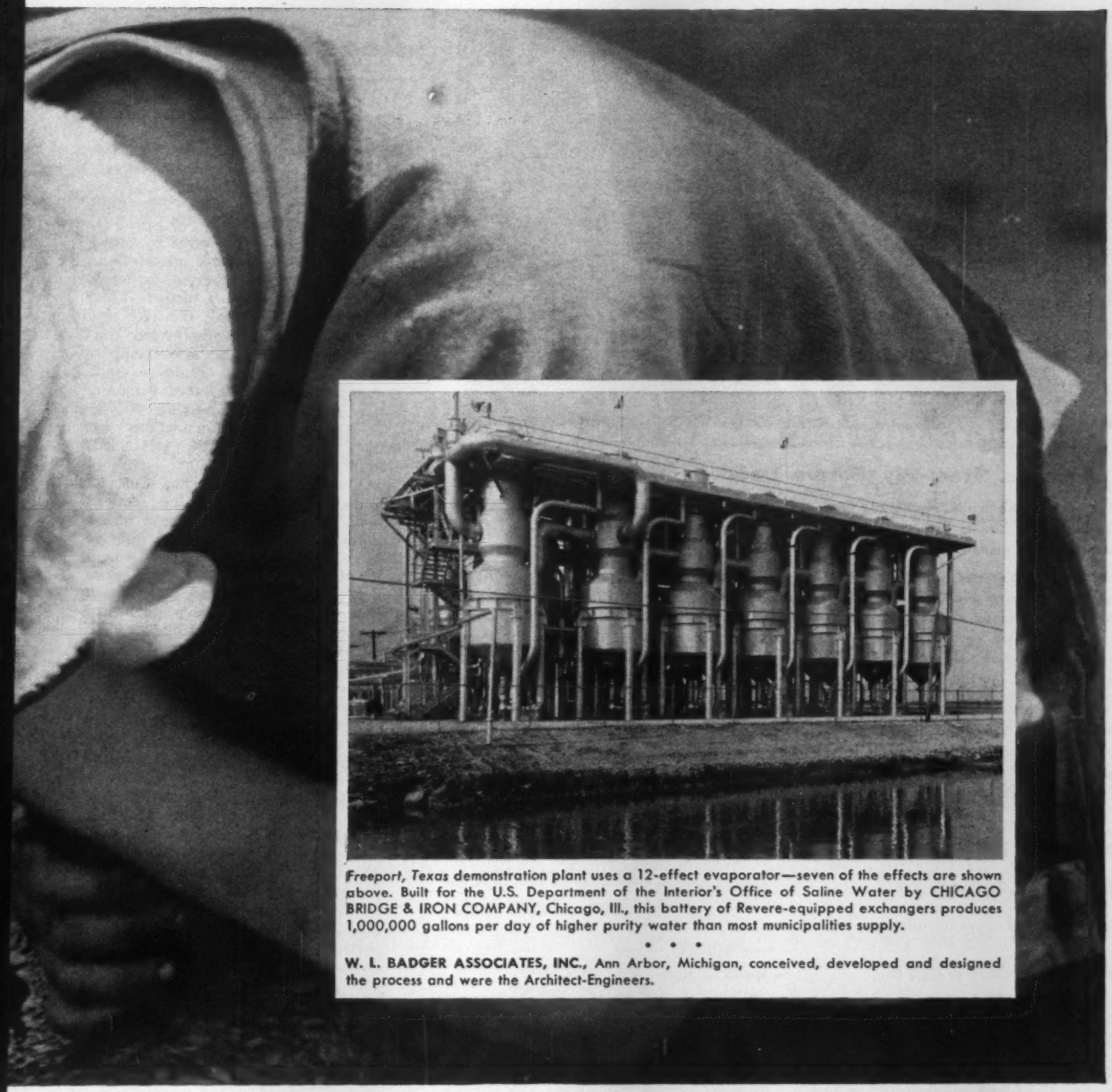
With the Help of 124 Tons of Revere Condenser and Heat Exchanger Tube in Prototype Sea-Water Conversion Plant

Peculiarly, in a world that is more water than land, there's a shortage in many areas of water fit to drink or use. The very presence of this "useless" sea water has long been a challenge to scientists, engineers and governments.

Recently, announcement was made of the first sea water conversion plant in the United States capable of producing 1,000,000 gallons of fresh water per day. It was designed to convert sea water to potable water for man, livestock and for use in irrigation, and was placed on stream experimentally in Freeport, Texas in June 1961, by the Office of Saline Water of the U.S. Department of the Interior.

The unit consists of a 12-effect evaporator that heats the sea water, converts it to steam and manufactures useful water. Here—as wherever heat, pressure and moisture are handled—was another use for Revere Tube.

In one part of the equipment, where the combina-



Freeport, Texas demonstration plant uses a 12-effect evaporator—seven of the effects are shown above. Built for the U.S. Department of the Interior's Office of Saline Water by CHICAGO BRIDGE & IRON COMPANY, Chicago, Ill., this battery of Revere-equipped exchangers produces 1,000,000 gallons per day of higher purity water than most municipalities supply.

• • •

W. L. BADGER ASSOCIATES, INC., Ann Arbor, Michigan, conceived, developed and designed the process and were the Architect-Engineers.

tion of briny water, 250 degree temperature and pressure was encountered, *Revere Welded Steel Tube* was recommended. Over 15 miles of it, in fact, in the 12-effect evaporator. But since this was to be a "demonstration" plant, additional Revere Alloys were recommended for test purposes . . . Admiralty, Aluminum Brass and 90/10 Cupro Nickel. Altogether, this Conversion Plant used an amazing 124 tons of Revere Tube!

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(Advertisement)

Building up Seawall at Baltimore Marine Terminal. Contractor, Empire Construction Co., Baltimore

Symons Steel-Ply Forms Used in Tight Quarters

Three 6-foot-high walls, each 1200 feet long, with an additional 200 feet curved section at the outer end had to be formed within a working space of 39 feet, measuring inshore from the existing seawall.

Empire used Symons Steel-Ply Forms for the work which required perfectly aligned forms so that there would be no trouble when installing rails for the craneway. Some 6,300 feet of Symons Forms were in use at one time. Attachment was simple, and a minimum of skilled carpenter time was required for the work. All this eased the work of erection, stripping, and storage. The forms were particularly valuable in work on the tapering edge of the buildup on the seawall and the curving sections of the walls.

Symons Forms are rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. M-1, Chicago 39, Illinois.

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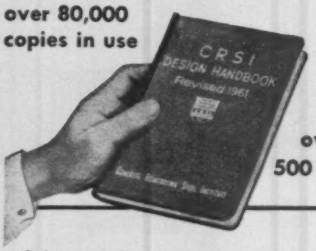

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Reader Comment

Prestressed Concrete

SIR—Recent issues have contained several statements on prestressed concrete which must be challenged.

In Specialist on Sick Structures Speaks Out (ENR Nov. 9, p. 50), Jacob Feld calls for control by structural engineers over every phase of the manufacture of prestressed concrete because of reduced load factors. Load factors for prestressed concrete are identical to those for reinforced concrete. This can be checked by comparing Section A604 of "Building Code Requirements for Reinforced Concrete (ACI 318-56)" with Section 205.3.1 of "Tentative Recommendations for Prestressed Concrete" by ACI-ASCE Committee 323.

In the same article he cites a project where 60-ft span double-tee sections sagged 9 in. when erected, and he attributes this condition to bond slippage caused by vibration during shipment from plant to jobsite. In spite of close contact with the industry throughout the country, we have been unable to locate this incident or any like it. Also the results of numerous tests of pretensioned members under millions of cycles of overload without bond slippage make one wonder how slippage could be caused by a few hundred thousand cycles during transportation when the member is merely carrying its own dead weight.

In Corrosion Wrecked Prestressed Tank (ENR Nov. 2, p. 23), Mr. Feld says, "The tank failure was the result of loss in wire section. The major cause of such loss seems to have been internal disintegration of the wire fibers. . . . The only factor which by itself would eventually cause failure is internal or stress corrosion." These statements do not agree with each other. Stress corrosion causes cracks in the wire, but only a negligible loss of material. For definition see Section 304.6 of "Tentative Recommendations for Prestressed Concrete" and definition of stress-corrosion cracking in Metals Handbook, ASM Vol. 1 Properties and Selection of Materials, 8th Edition. The loss in section would be due to chemical corrosion.

In the same article he says: "There is no known corrective measure that can inhibit or counteract this internal disintegration of wires while under serv-

(Reader Comment continued p. 13)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

In 1789 it was known as the whiskey trail. Pioneer farmers found it was easier to carry a barrel of spirits to market than a wagon load of grain. The trail over the Alleghenies was long and travel was slow. Twenty miles a day was exceptional. Today, you can cross the entire state in less than a day by following the same basic trail on the Pennsylvania Turnpike.

Superhighways, such as the Turnpike, will soon crisscross the state as Pennsylvania completes its 1,540 miles of the nation's Interstate Highways System.

To date, more than a third is completed and in use. For more details on Pennsylvania's Interstate Highways progress, turn the page. ☞

The strongest link in Pennsylvania's

Pennsylvania has been one of the nation's leading states in highway development. 'Way back in 1938, it started building a through-state turnpike which turned out to be a model for all other superhighways. This was only the beginning. A total of 1,540 miles of interstate roads will be its part of the Federal Program. In Pittsburgh alone, the Penn-Lincoln Parkway system links the Route 22 turnpike exit at Monroeville to downtown Pittsburgh, then passes across town and out through the western suburban communities to the Greater Pittsburgh Airport—with two tunnels totaling 2⅛ miles in length, and 49 overpasses and underpasses—a total of 25 miles without a single stoplight! Design was handled by three of the largest structural design engineering firms in the East. They installed 61,531 tons of fabricated structural steel, 23,100 tons of reinforcing bars, 2,886 tons of steel pipe, and 25 miles of welded wire fabric for the four-lane highway. Steel highway hardware products like guardrails, fencing, culverts and signs weighed in at 5,111 tons. Steel is a vital link in Pennsylvania's highway program. **a.** Of the 1,540 miles of Pennsylvania Interstate Highways, many miles are concrete made with Universal Atlas Cement, and will be reinforced with steel. These highways will last longer, ride smoother, and cost less to maintain. USS AMERICAN Welded Wire Fabric distributes the load evenly and reduces stress about one-third. **b.** Tunnels blasted out of solid rock were immediately shored throughout with steel H-Beam ribs spaced on 2-3 feet centers to prevent cave-ins. This permanent structural steel backbone was then embedded in steel-reinforced concrete tunnel lining. **c.** Construction equipment is built from more than 150 varieties of steel, including USS MAN-TEN, COR-TEN, and TRI-TEN High-Strength Low-Alloy Steels, and USS "T-1" Constructional Alloy Steel, for ruggedness, reduced weight, abrasion resistance, and all-weather performance. **d.** Costly erosion of road embankments may be stopped by steel culverts fabricated from corrugated galvanized USS Culvert Sheets. They assemble fast, and the first cost is low. Many times they have outlasted the roadway. **e.** Over 61,000 tons of structural steel were hoisted into place with cranes

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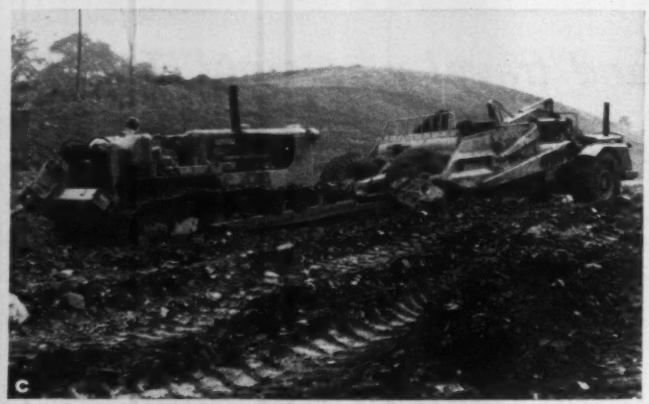
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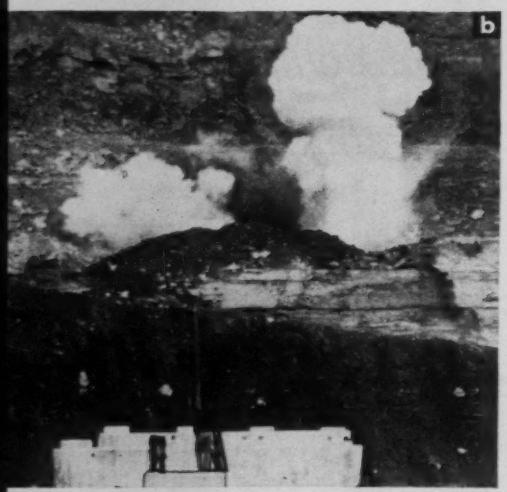
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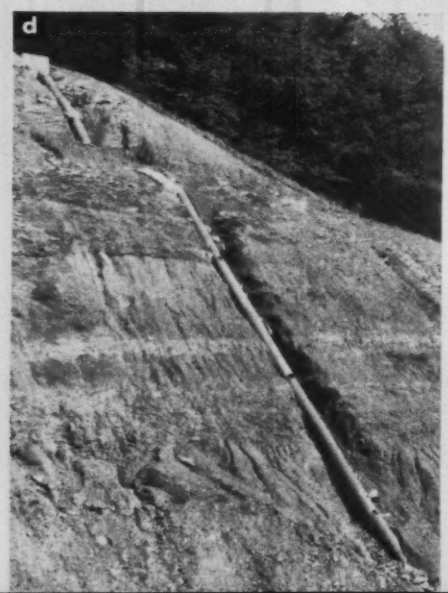
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Interstate Highway program is steel

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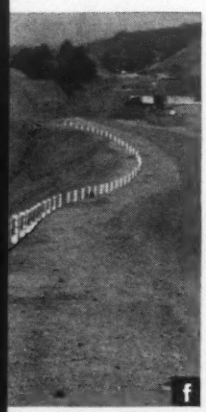

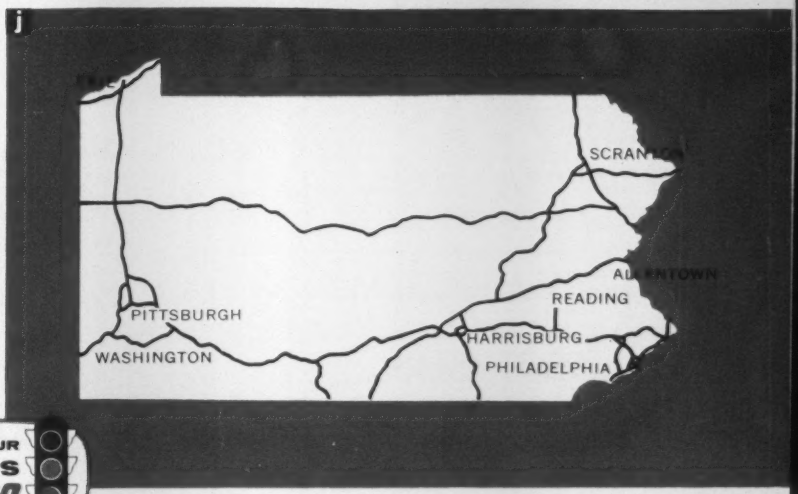

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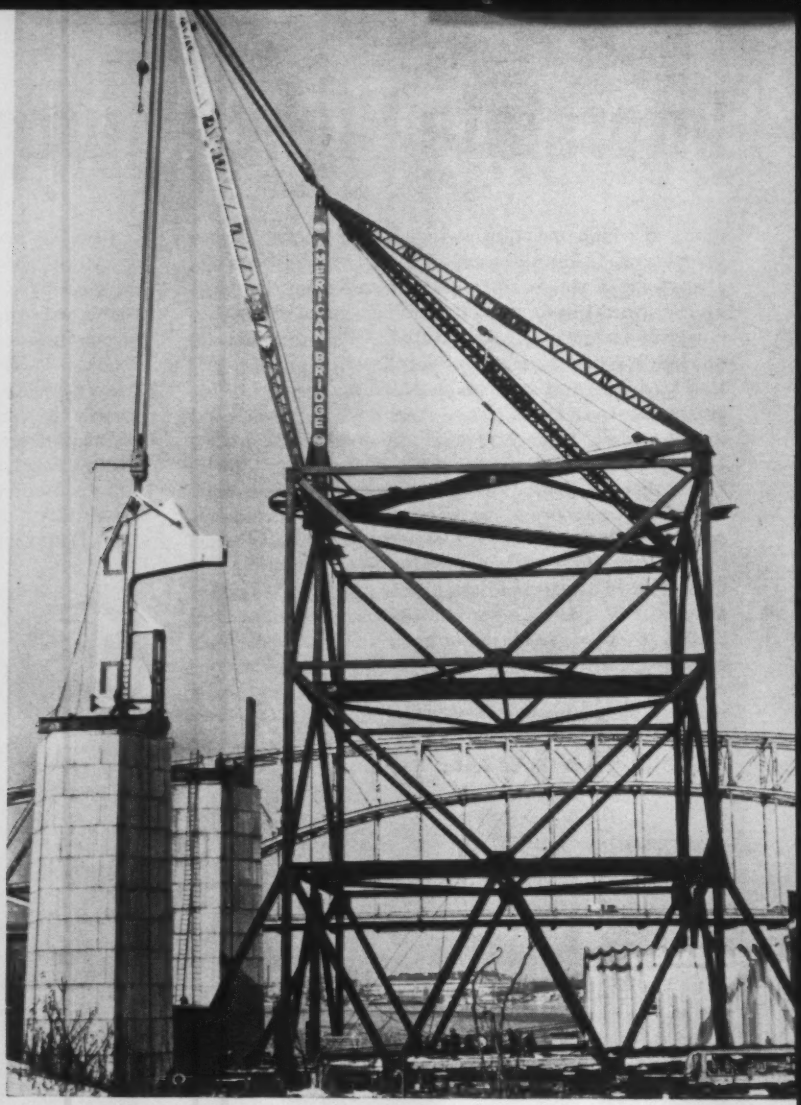

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Construction Materials Division
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The Colorado Fuel and Iron Corp.
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Questions Scaffold Tests

SIR—A recent article (ENR Nov. 16, p. 58) refers to tests conducted by a company that might perhaps be prejudiced. No reference is made as to the number of tests that were conducted, and I believe reference or statements such as "carried 50% more load than—" can be extremely misleading, unless specific information is included regarding the nature of the tests and the number of tests conducted.

Recently, the members of the Steel Scaffolding & Shoring Institute conducted a series of tests on scaffolding towers one, two, three, five, seven and nine tiers high. These scaffold panels or frames were of the ladder type, using normal cross braces. In these tests, two sizes of frames or panels were tested. Frame or panel design was similar to the type produced by most manufacturers, but it was specifically designed and produced for these tests. The tests were conducted using the standard test procedure developed by the engineering committee, and the test results were verified by a representative of an independent testing laboratory who was in attendance throughout the test period.

The results of these tests indicated that failures occurred in the normal "S" pattern in all instances. The tests also indicated a fact which is well known throughout the industry, and that is that there is a difference in the load-carrying ability of one, two and three lift towers. The normal curve is a regular decrease in load-carrying ability as the height of the tower is increased from one to three lifts. Thereafter it appears there is little change in this property.

These test results will be released in the very near future. We hope this information will point out some of the inconsistencies in the article published in your November 16 issue.

F. A. PETERSEN
Steel Scaffolding & Shoring Institute
Cleveland, Ohio

(The calendar of meetings and shows formerly appearing in this space is now a regular feature of the first issue of each month. Look for the next, lengthened calendar in the issue of Jan. 4, 1962.)

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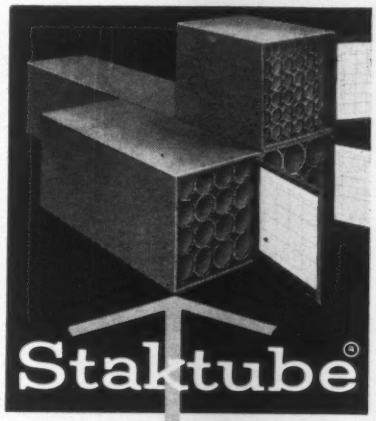

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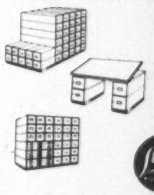

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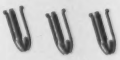

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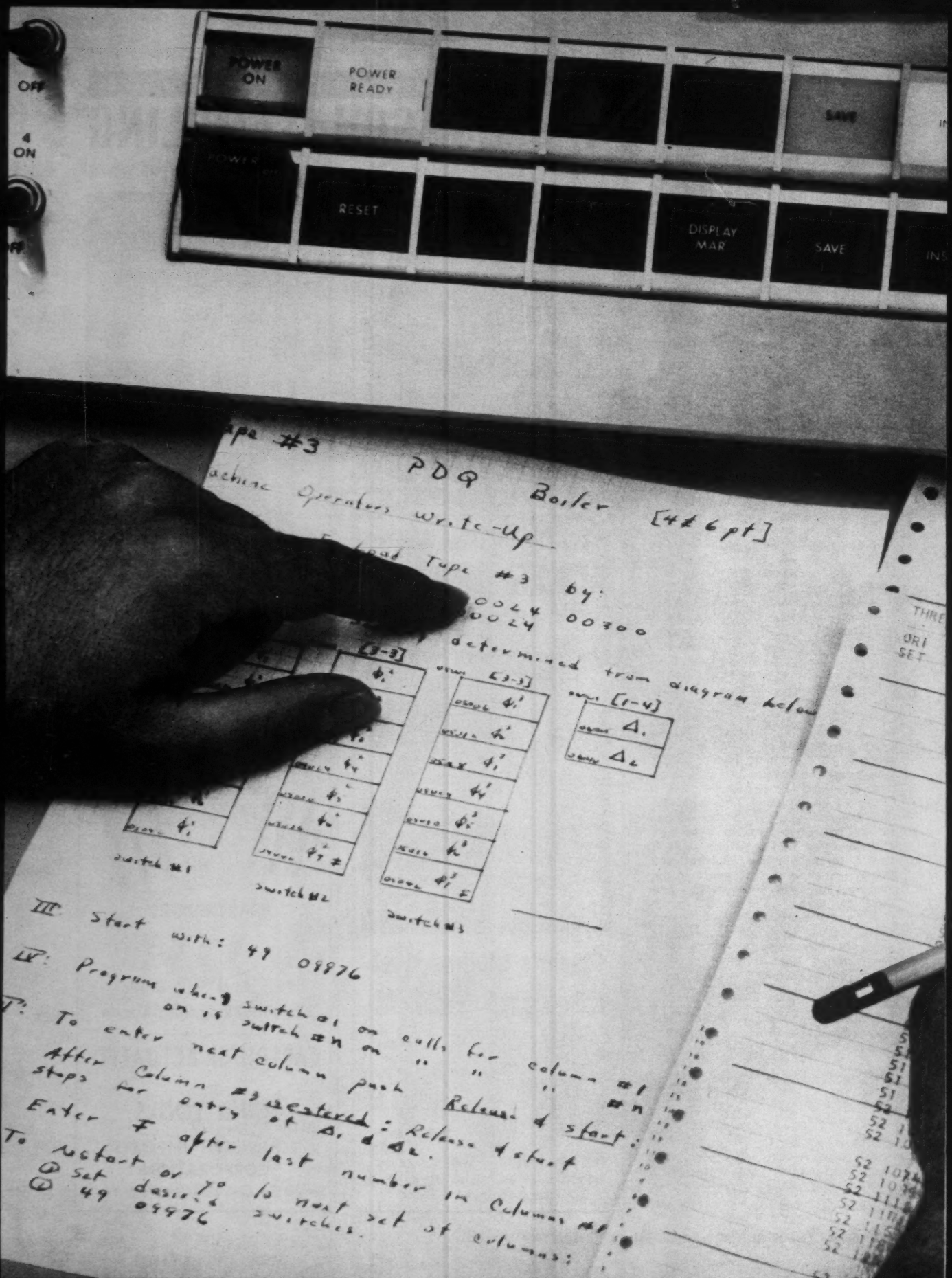
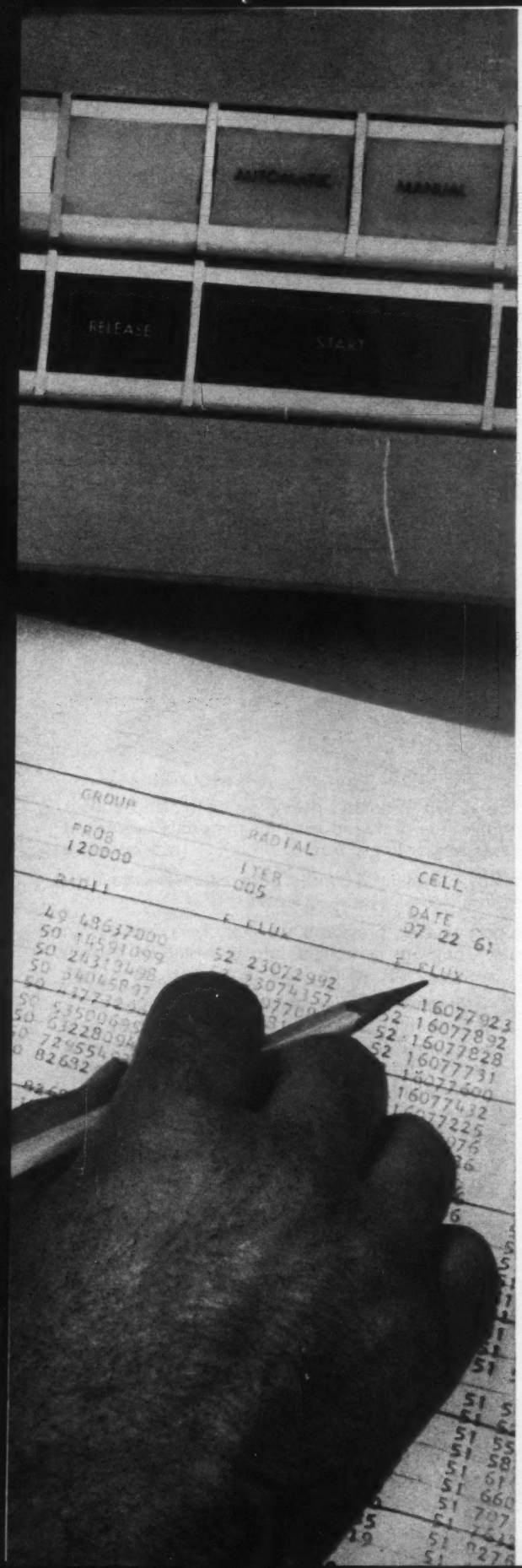

POWER ON
POWER READY
SAVE
RESET
DISPLAY MAR
SAVE
OFF
ON
pe #3 PDQ Boiler [4 & 6 pt]
achine Operators Write-Up
Load Tape #3 by:
00274 00300
determined from diagram below
switch #1
switch #2
switch #3
III. Start with: 49 09876
IV: Program when switch #1 on calls for column #1
switch #2 on " " " #2
switch #3 on " " " #3
V: To enter next column pack Release & start:
After Column #3 entered: Release & start
steps for entry of Δ1 & Δ2.
Enter F after last number in Columns #3
To restart or go to next set of columns:
① Set desired
② 49 09876
switches.



Cost of one-dimensional criticality computations drops from an average of $75.00 to $7.50 per problem

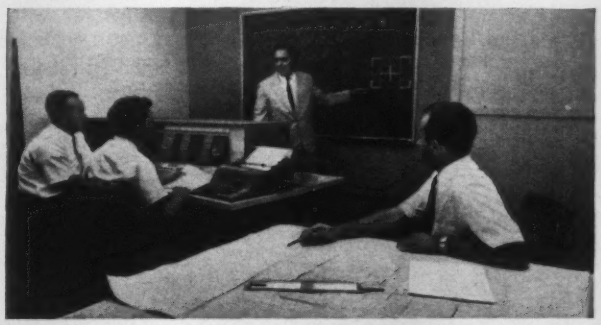
Faster computing, less travel time are the reasons why General Nuclear Engineering Corporation has realized such cost savings since it installed an IBM 1620 Data Processing System at its Dunedin, Florida plant.

Since its main computing facilities are not located at Dunedin, General Nuclear has found that the new 1620 eliminates much of the travel time and expense involved in taking problems to off-site computers. In addition, the 1620 performs the simpler criticality computations 10 times faster than the computer previously used at one of General Nuclear's off-site data processing centers.

General Nuclear uses its new 1620 for other problems, too...heat transfer calculations, various transient codes, mathematical routines for the physics and engineering departments, multi-group calculations, and many other jobs you might expect only a much more expensive computer to be able to handle.

This isn't all. General Nuclear uses the 1620 to do statistical analyses and variance calculations on input data for programs run on off-site large-scale IBM computers.

For information on this highly versatile, low-cost data processing system, which rents for as little as $1600 a month, contact your local IBM Representative.



Easy to program. FORTRAN, IBM's scientific computer language is available for the 1620. General Nuclear scientists use a special scientific interpretive program—FIDO—written by the Manager of their Computing Section.

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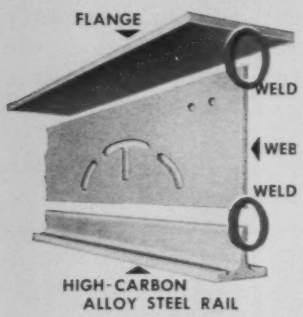

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Tarca Track was perfected by Cleveland Tramrail after extensive research and testing. It is different from all other overhead tracks.

Tarca Track parts are proportioned to provide a perfectly balanced design to suit all load requirements. They are combined into one rugged section by automatically controlled welding. All welds are continuous to assure maximum rigidity.

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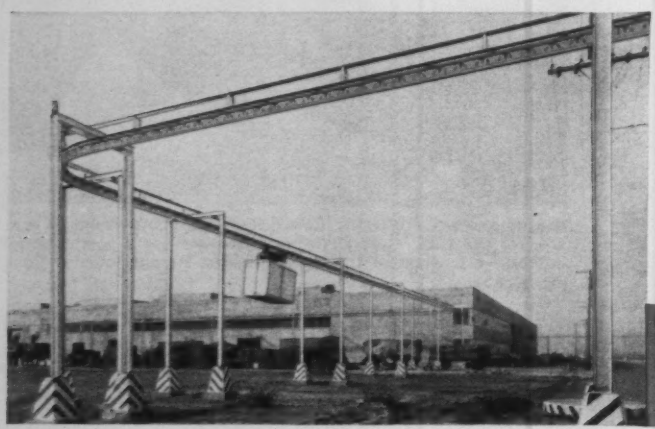
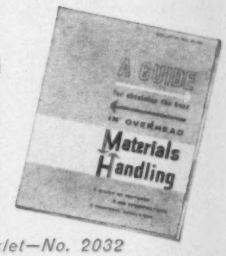


AUTOMATIC MATERIALS HANDLING

Cleveland Tramrail overhead equipment is available for nearly every materials handling requirement. It is widely used for automatic systems operating between two or more points on the same or different elevations, or between buildings as illustrated. One system serves 126 stations.



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ENGINEERING NEWS-RECORD

Vol. 167, No. 24 December 14, 1961

Number of copies printed in this issue 88,705

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THE CONSTRUCTION WEEK

PLOWSHARE'S SHAKY START—How fast—and how publicly—planned later shots go ahead in the peaceful nuclear explosions program may be in question in light of the inauspicious, but well publicized beginning last Sunday. The blast either broke through or went around three massive plugs in the tunnel leading from the underground detonating chamber.

LATE, LATE MOVE—The Federal Housing Administration "will delay until the latest possible moment," any boost from the present 5¼% interest rate on mortgages it insures, says HHFA head Robert C. Weaver. The information came in answer to questions on the generally rising cost of money at the NAHB convention in Chicago (p. 21).

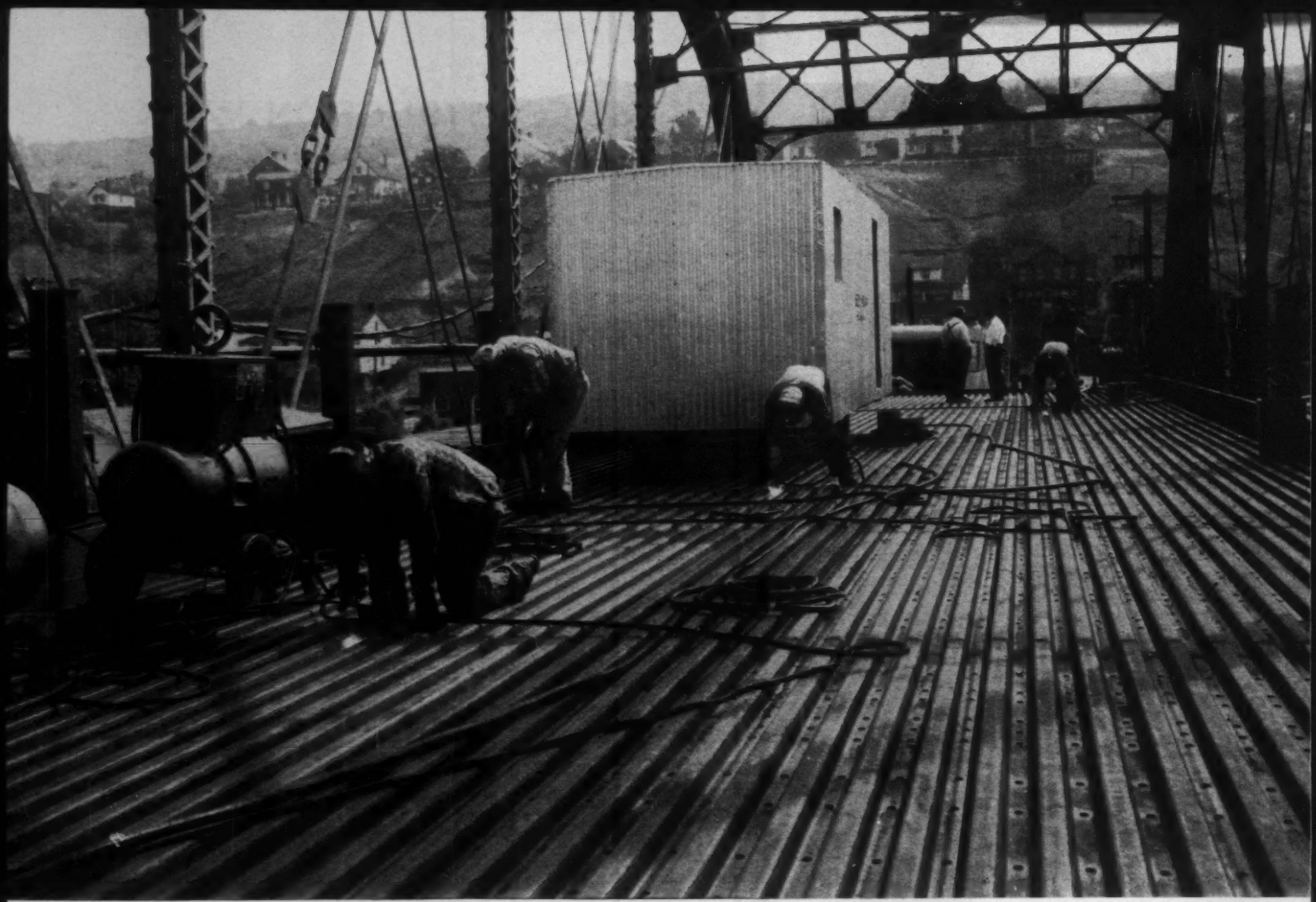
PLASTIC PYRAMIDS—Details of a plastic (polyvinylchloride) space-grid roof to be built in 1962 will be announced at a special symposium on structural plastics in England soon. Hollow, unreinforced plastic pyramids, 3 ft square and 3 ft high, will form the roof. They will be joined at the bottom edges and connected at the apexes by a continuous plastic sheet.

STATISTICAL JOYS—Engineering graduates will be offered 3% more starting salary than last year, and there will be 26% greater demand for them, according to Northwestern University's annual survey of 215 corporations in 27 states. Starting salaries for 1962 will be about $560 per month.

BEAUTY VS. ECONOMY—The California Toll Bridge Authority will probably switch designs next month for their new San Mateo-Hayward Bridge from a double-decked steel truss structure costing $65 million to a single-decked box girder design with orthotropic plate deck costing $70 million. The switch is a direct result of newspaper criticism of the truss design as "ugly and unimaginative."

RAPID RAPID TRANSIT—Hovercraft Development Ltd. of London is studying the feasibility of an interurban network comprising 300-mph, 150-passenger hovercars running above tracks. Design calls for a streamlined vehicle that would ride ½ in. above a specially prepared, trough-type roadway, supported by multiple pressurized air cushions. Main application is thought to be a network using the proposed Channel bridge (ENR Nov. 30, p. 21).

JOB FOR A STACKJACK—TVA needs a stack wrecker with the talents of a lumberjack. The agency takes bids this week on felling a 225-ft brick smokestack at an old steam plant near Benton, Tenn. The contractor must drop the stack in a 40-ft-wide strip between transmission equipment and a substation—or take the financial consequences.



Bethlehem Formed Steel Bridge Flooring being installed on the Donora-Webster bridge over the Monongahela River. *Contractor:* Ferguson & Edmondson Co., Pittsburgh, Pa.

Husky steel bridge floor adds new life to old bridge

When the bridge connecting the towns of Donora and Webster in western Pennsylvania needed reconditioning, some 45,000 sq ft of Bethlehem Formed Steel Bridge Flooring was installed over the bridge's steel stringers. The strong, formed-steel plate was used in 2-ft widths. It went into place quickly, providing a long-lasting, economical, and maintenance-reducing floor. After installation, a bituminous concrete surfacing was applied.

Bethlehem Formed Steel Bridge Flooring can be used for new bridge floors, or for reconditioning existing bridges. It meets the standard strength specifications for highway bridges of the American Association of State Highway Officials. For complete information on Bethlehem Formed Steel Bridge Flooring, call the nearest Bethlehem sales office.

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WASHINGTON OBSERVER

- **Pentagon counts builders among top firms**
- **JFK will ask for pump-priming public works**
- **FTC rules on A-bomb shelter advertising**

- **Eight construction firms rank among the top 100 defense contractors for fiscal 1961, which ended last June 30.** Leader is Fuller & Webb, a joint venture (George A. Fuller and Del E. Webb) which received $62.1 million worth of contracts during the year and ranked 54th on the defense list.

  Morrison-Knudsen Co. was second among construction firms with $45.6 million worth of contracts. Others in the Pentagon's top 100: Martin K. Eby Construction Co., $42.1 million; Mason & Hanger-Silas Mason Co., $36.5 million; Fluor Corp. Ltd., $35.6 million; Fuller-Webb-Hardeman, $31.1 million; Midland Constructors Inc., $28.9 million; Jones-Teer-Winkelman, $28.1 million.

—

- **President Kennedy will ask Congress for authority to pump federal funds into public works projects in a business slowdown.** He has endorsed, with some modifications, the principle of a bill long advocated by Sen. Joseph S. Clark (D., Pa.). The Clark bill would provide $500 million in federal grants for local projects that are ready to go, needing only money.

  Mr. Kennedy differs with Senator Clark in one major respect. Under the Clark plan, federal funds would begin to flow automatically when the unemployment rate hits a specified level. The President does not want any formula that would take control of spending out of the White House. He will ask for discretion to begin spending when he considers unemployment to be too high.

  The White House also is considering another measure to spur private business growth through "quickie" tax cuts. Under this, Congress would give him authority to raise or lower income taxes slightly to combat a recession or promote business activity. The Council of Economic Advisers favors this idea, but the President has not yet given it his approval.

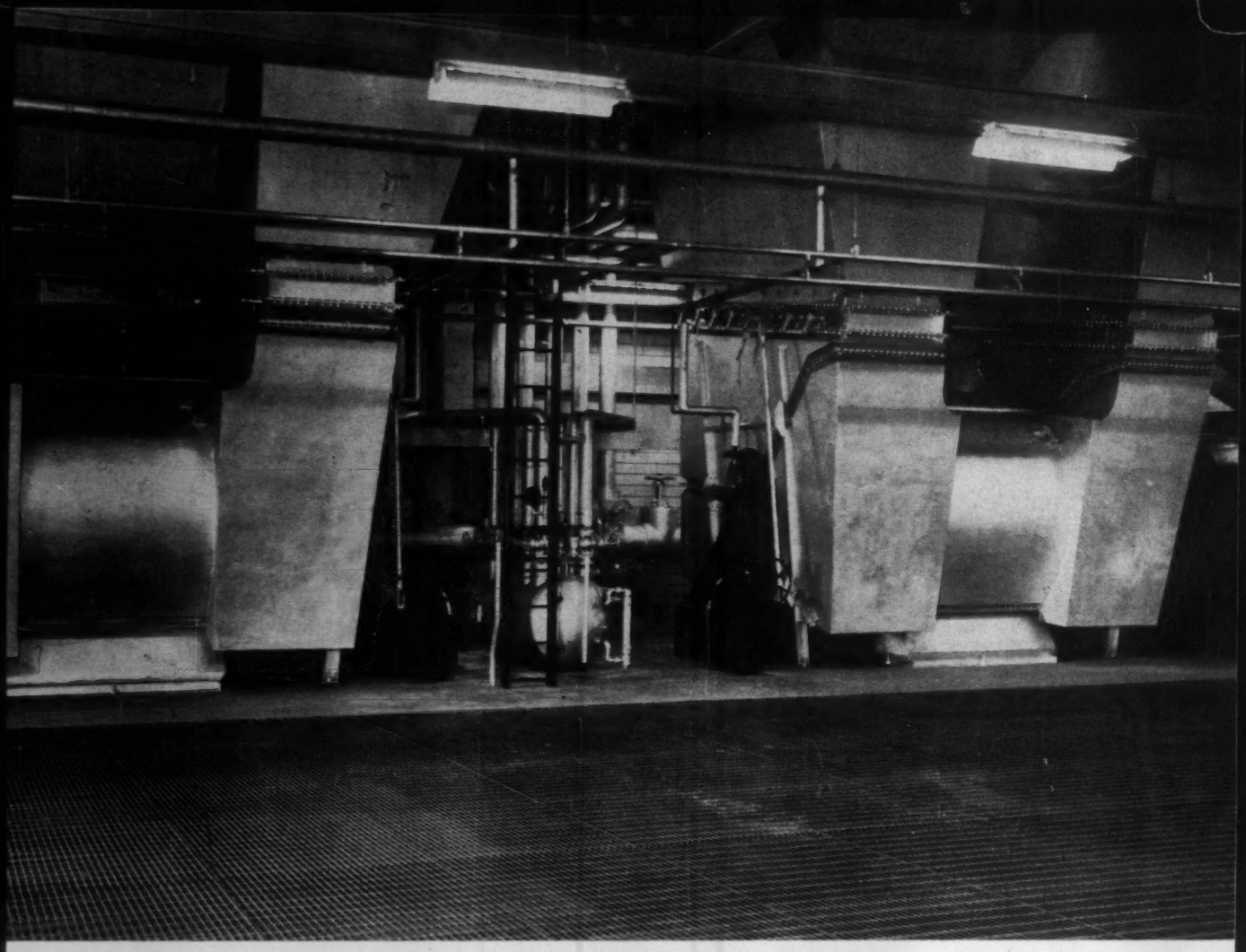
—

- **Advertising standards for fallout shelters have been issued by the Federal Trade Commission.** They reflect the minimum construction requirements set by the Office of Civil Defense, and will be used by FTC to determine whether contractors or sellers are employing illegal or deceptive advertising techniques. Generally, the standards are these:

  Use of such terms as "blast shelters" are forbidden. A "blast-resistant shelter" must be capable of withstanding an overpressure of 30 psi. A "limited blast-resistant shelter" must be able to withstand an overpressure of 5 psi. A "fallout shelter" must reduce gamma radiation at least 100 times. Any claim of complete fallout protection under all conditions is banned.

—

- **Railroads have won a round in their battle to move roadbuilding machinery and parts at reduced rates.** The Interstate Commerce Commission canceled the cut on grounds that it would be destructively competitive with motor carriers. But the railroads won a temporary restraining order against ICC contending its ruling was based on a misinterpretation of the ICC Act.



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Builders See Fruitful Year . . .

- **Mortgage-money scarcity is no threat, but a few predict slightly higher interest rates.**
- **Apartment construction promises to continue as important part of total housing market.**
- **Local special situations and stronger economy in general give substance to optimism.**

Home Market Is Poised for a Rise

Homebuilders poured into Chicago last week apparently convinced that a money-tree grows in their own backyard. They expect it to bear fruit abundantly in 1962, thanks to the last Congress' juicy housing bill and an over-all improvement in the nation's economic health.

Few of the more than 25,000 builders, architects and materials suppliers attending the convention of the National Association of Home Builders expressed doubt about the housing outlook for next year.

This convention undoubtedly ranks as the most carefree of the past five years. Conspicuously absent was the phrase, "the crisis in housing," an exclamation heard so frequently in past years it could have qualified as the association's motto.

Builders face no mortgage-money scarcity. Congress gave them a bundle of new programs designed to make home ownership and rentals as financially painless as possible and a boost in defense spending promises to ease unemployment.

Estimates of 1962 housing starts generally ranged from the U. S. Department of Commerce's 1.4 million units to that of a few leading builders, 1.5 million. One of the more optimistic prognosticators conceded however, "All those starts may not be sold or rented—some builders may stare eventually at a big inventory."

Conversation with builders from all parts of the nation indicates that 1962 residential starts could very well fall midway between the forecast extremes. A few builders unhesitatingly report their plans call for a doubling of production next year. The largest number, however, put their production increases in range of 12% to 30%.

Factors influencing these decisions include special financing programs through the Federal National Mortgage Association (Fannie Mae), an anticipated generous supply of funds for mortgage lending, and generally good demand for rental and cooperative living units in multi-family buildings.

Some builders also cited the 35-year mortgage as a possible help, but most described it either as an unknown quantity or of little importance. In some regions, however, the extended term to 35 years from the former 30 years already plays a role in the market. But lenders ask a larger discount on 35-year mortgages than on 30-year mortgages.

Two builders "heard from good sources" that a major insurance company expects to enter the 35-year mortgage field sometime early next year. So far, the 35-year mortgage appears to be of small importance in the total national housing market.

Multi-family units will continue to claim a good part of the private housing market next year, just as this year and in 1960. Home ownership responsibilities encourage the trend to apartment construction, according to builders now operating in both the individual housing market and the apartment building market.

While retired couples claim the largest part of the apartment market, builders take note of the middle-aged who find their way to the rental office. In some cases the children of couples have set out on their own or they are away for extended periods at college and the three- or four-bedroom suburban home with its expanse of attention-demanding lawn holds little attraction now. The apartment in the city proper and, to an ever increasing extent, in communities just outside the city draws the 45-to- 55-year-old group as well as those in retirement.

Builders strive to meet the needs of both groups, but not without facing some business risks. Where one builder leads, others soon follow and in many areas apartments materialize faster than tenants, according to developers and builders in several cities.

Several builders in midwestern cities report a sharp rise in the number of vacant apartment units, although Chicago still sees supply and demand fairly well balanced. In other cities, Cincinnati, Cleveland, and Columbus for instance, starts on apartment units have tapered off.

Central Connecticut and a wide area around Hartford count as good apartment markets. Although individual housing appears to be mainstay of developers, the apartment building surge there gives reason for caution on the part of some builders, their suppliers and lenders. On the whole, however, this area is expected to show about a 10% increase in building next year, after leveling off in the last year.

Detroit-area builders, looking forward to a good year for the automotive industry, expect that housing production there will rise about 25% above 1961, more than offsetting this year's drop of about 15% from 1960.

Special situations establish the basis for a predicted strong recovery for housing in some areas. In Florida, particularly around the area of Cape Canaveral and south of Miami, intensified space

exploration plans could add up to a housing boom. Much still must be decided by the government, however, before that pleasant economic experience becomes a reality.

The Houston area, also a candidate for space and defense operations, looks to a continued strong market in housing. Some builders plan on starting 50% more living units next year than they did this year.

Albuquerque and southeastern New Mexico also feel the impact of defense operations. This year housing starts rose about 30% over 1960, and 1962 volume probably will match this year's. From Roswell, site of an ICBM project, however, comes a sadder story. Housing booms, but builders don't. About 80 builders now operate in a city of about 40,000 population. Builders described the picture in one word —cutthroat. Missile bases helped create the conditions that exist there, according to state association spokesmen.

A few builders in this area, in company with others in all parts of the country, plan non-housing operations to boost their company earnings. Many cracked the home improvement market some time ago as one means of bolstering earnings. Now other types of markets appear attractive. Among them are light commercial construction and shell housing. With about the same equipment and subcontractors used in building houses, homebuilders can expand into the construction of smaller commercial buildings, professional buildings, stores and small shopping centers costing $200,000 to $500,000.

A session on shell housing at the NAHB convention drew about 500 builders interested in learning about this fast-moving market.

Promised issuance of a Presidential Order that would outlaw racial discrimination in the sale or rental of housing financed through government programs ignited fears among members.

Delegates to the NAHB convention passed a resolution asking that President Kennedy withhold such an order until the organization completes a study of the decree's possible economic impact. At the same time, the delegates ordered association officers to start the study.

Prior to this action, Rep. Albert Rains (D., Ala.), said the order would be, "disastrous to homebuilders."

Fifteen minutes later, seated in the same chair, HHFA Administrator Robert C. Weaver flatly contradicted Mr. Rains' statement. "The experience of New York State in legislation along these lines (anti-discrimination) in 1956 did not produce the dire results prophesied."

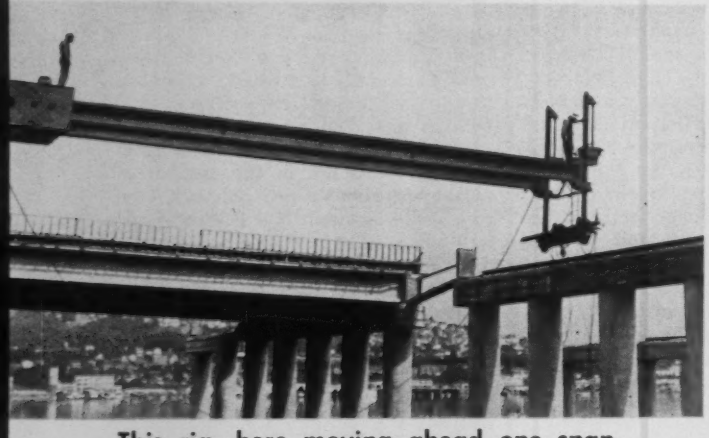
Builders would stop or cut back production of housing financed under Federal Housing Administration and Veterans Administration programs, according to a few spokesmen for state builders' associations.

In the South, builders would turn to conventional financing and mortgage insurance written by private companies, says an NAHB regional vice president.

Curtailment of homebuilding would not be limited to southern states, according to the same source. "All sections of the country would be affected either equally or to a slighter degree," he says. He indicated, however, that any cutback probably would be temporary, but he did not rule out the possibility of permanent injury to the housing market.

In that period that builders look for and gear to financing outlets other than those supported by government programs, the country could be plunged into a deep depression, the regional executive believes. "From such a depression, the nation could not easily recover," he adds.

A few executives in the NAHB privately disagree with the southern viewpoint. Says one: "The people won't stop buying houses, order or no order. As long as people buy, builders will build."



This rig, here moving ahead one span . . .

fell while placing girders on a Seattle freeway.

Girder Launcher Slips, Hurts Three Men

A 50-ton girder launcher was damaged and three workmen injured, one critically, in Seattle last week when a transverse rail supporting the outer end of the launcher fell from the outside concrete pier cap to which it was anchored.

Joint venture contractors Rumsey & Co. and Morrison-Knudsen Co., Inc., are using the launcher to build an elevated section of Seattle's north-south freeway (ENR Aug. 24, p. 34).

Representatives of the Washington Department of Highways, the State Department of Labor and Industries, and the contractor are investigating to determine the cause of the accident.

The most seriously injured workman, knocked off his feet as the end of the launcher slipped out of position, fell some 50 ft to the ground below.

The launcher was placing an outside girder when the accident occurred. The 27½-ton prestressed concrete girder had been placed between two bent caps, 90 ft apart, and was being picked up again for final positioning when the outer transverse rail slipped off the cap. The launcher fell only a short distance, twisting sideways, until one of the two steel box beams of which it is formed came to rest on the cap.

In operation since early summer, the launcher had placed some 400 girders before the accident. Work on the project is about 75% complete.

Bridge Panel

SF authority will select Golden Gate study group

Thirteen men have been nominated as candidates for a three-man panel, which will make a new engineering study to determine whether or not the Golden Gate Bridge, connecting San Francisco and Marin County, can safely carry a rail rapid transit system (ENR Sept. 14, p. 26).

Directors of Golden Gate Bridge and Highway District will choose the panel. The presidents of Massachusetts Institute of Technology and California Technological Institute nominated the men. Final makeup of the board also must be acceptable to the Bay Area Rapid Transit District, which wants to install transit facilities on the bridge. Bridge directors will pay "reasonable" expenses for the study, estimated unofficially at up to $15,000.

The bridge directors also informally approved specifications for the study, which essentially cover safety, stability and advisability of putting trains on the bridge.

Originally, bridge directors accepted an engineering report by Clifford E. Paine, which declared the bridge incapable of safely supporting rapid transit trains, but later agreed to consider a new study by an independent board.

Engineers nominated to make the new study are:

O. H. Ammann, Ammann & Whitney, New York City.

Hans H. Bleich, professor of civil engineering, Columbia University.

Ray W. Clough, professor of civil engineering, University of California.

Linton E. Grinter, dean of the graduate school, University of Florida.

Robert J. Hansen, professor of structural engineering, Massachusetts Institute of Technology.

George W. Housner, professor of civil engineering, California Institute of Technology.

Bruce G. Johnston, professor of structural engineering, University of Michigan.

John M. Kyle, Jr., chief engineer, Port of New York Authority.

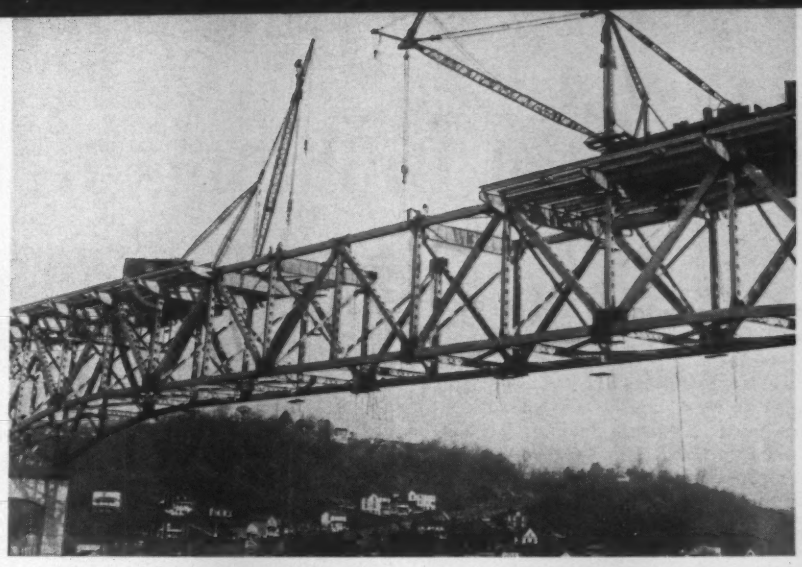
Frank M. Masters, Modjeski & Masters, Harrisburg, Pa.

Nathan M. Newmark, head of department of civil engineering, University of Illinois.

Charles Norris, professor of civil engineering, Massachusetts Institute of Technology.

Merrit P. White, head of civil engineering department, University of Massachusetts.

George Winter, head of department of structural engineering, Cornell University.



Monongahela Bridge Link Closed

The final structural steel link is closed on the 2,133-ft-long bridge over the Monongahela River at Brownsville, Pa.

The main section of the bridge, 1,144 ft long, consists of three truss spans. The east and west sections have simple wide flange beam spans and continuous girder spans.

A substantial portion of the top and bottom chord members of the cantilevered truss are A242 steel. The remainder of the members are fabricated from A7 steel. More than 4,600 tons of structural steel, fabricated and erected by Pittsburgh-Des Moines Steel Co., were used.

The bridge is part of U. S. Highway Route 40 and it is a main link in the area's route relocation. When completed in late 1962, it will allow traffic to by-pass the heart of the city.

The engineers of the bridge are Robert W. Lowry, Inc., Harrisburg, Pa., and the owner is the Pennsylvania Department of Highways. The superstructure cost $3.3 million.

BPR Asks Pilot Bore in Colorado

Gov. Steve McNichols of Colorado last week agreed to a proposal by the Bureau of Public Roads for drilling a pilot bore for the planned $28-million Straight Creek highway tunnel under the Continental Divide (ENR Aug. 17, p. 25).

BPR's proposal—made in Denver by Assistant Commissioner George Williams—settled a sharp disagreement between Governor McNichols and Chief Engineer Mark U. Watrous of the Colorado Department of Highways over engineering proposals to design the tunnel.

International Engineering Co. of San Francisco had offered to do the work for $677,000, and was favored by the governor because of what he termed "superior experience in designing such tunnels." E. Lionel Pavlo, New York City consulting engineer, who prepared the location study adopted by the Highway Department, offered to design the tunnel for $375,000.

"Your fee is too high for me to justify participation in a federal-aid project," Mr. Williams told four officials of International Engineering at the Denver Conference. (The tunnel will be on an Interstate highway.) "The Bureau does not question the competency of International Engineering, but it does question the validity of its cost estimates," he said.

Torald Mandol, International's vice president and chief engineer, said sizable contingencies were written into the $677,000 proposal. "We still haven't had a chance to inspect the site," Mr. Mandol said.

Mr. Williams said nine other tunnel projects recently built under the Interstate highway program had design fees ranging from 1.795 to 6% of total cost. He said the percentage dropped sharply as the cost rose and none of those projects was as costly as the Straight Creek tunnel. International's design fee was 3.3% of the estimated total cost.

Commissioner Williams suggested the pilot bore could save both time and money on the completed tunnel but added, "There's no guarantee of either saving. . . . A pilot bore will solve the drainage problem and eliminate the need for the contingencies that are written into the present proposal."

State highway crews will drive the 7 x 8-ft pilot bore at an estimated cost of $700,000. Estimates of delay in the main tunnel range to 24 months.

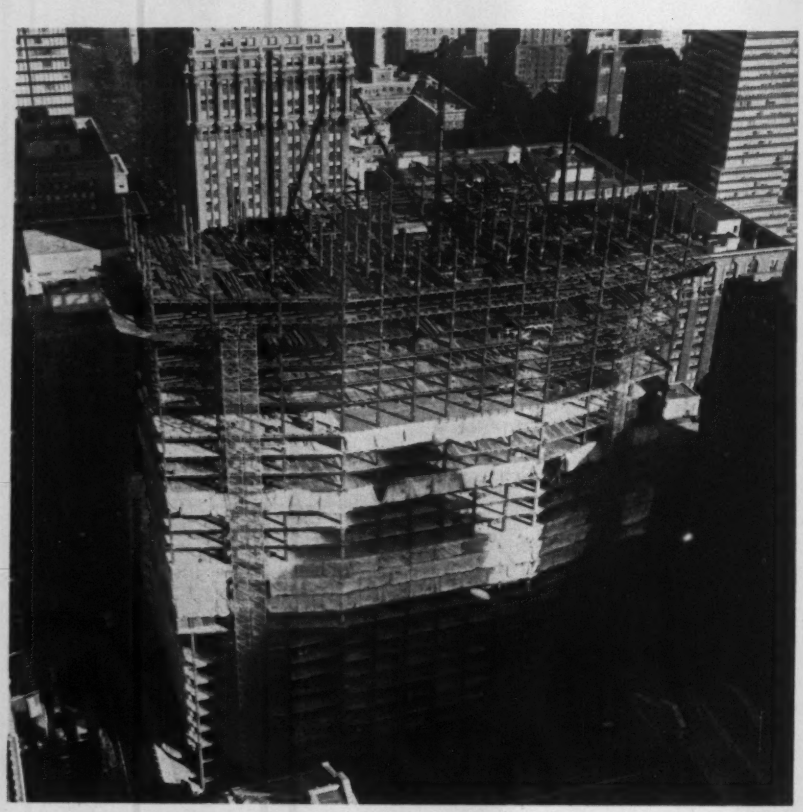
Novel Buildings Reach Erection

PanAm Reaches Midheight

Maintaining a pace of two stories a week, steel erection crews passed the halfway mark ahead of schedule on the 58-story PanAm building in New York City (ENR Feb. 26, 1959, p. 23).

Tight scheduling keeps material moving at the congested 3½-acre site over the tracks at Grand Central Station. Truck and train deliveries are timed to a split-second because there is no storage space on the site.

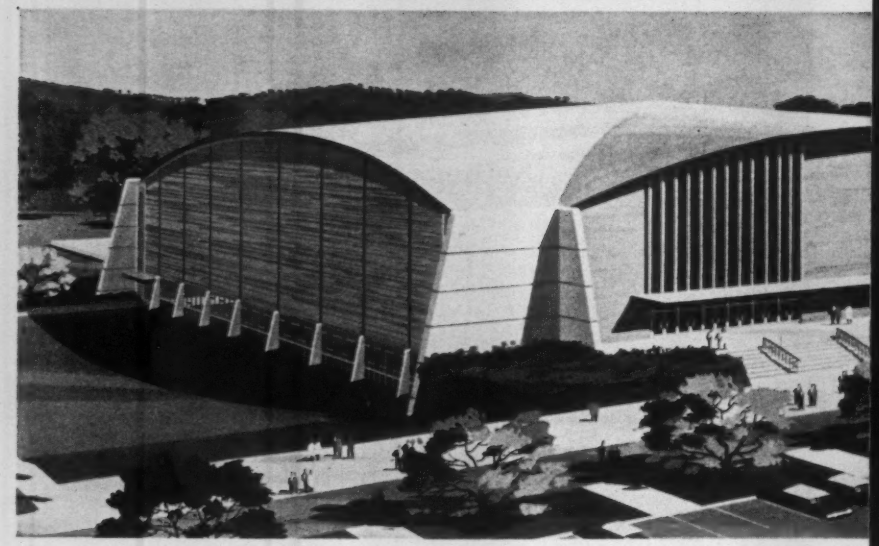
American Bridge Division, U. S. Steel Corp., is fabricating and erecting the steel, with John Murphy as job superintendent.



Conical Building Completed

The conical, seven-story Security Federal Savings and Loan Association building in St. Petersburg, Fla., measures 60 ft in diameter at ground floor and 78 ft at the roof. Structural framing comprises 8-in. flat slabs and circular concrete columns.

Architect was William F. Cann of St Louis. R. M. Thompson Co., Clearwater, Fla., and Frank J. Rooney, Inc., of Miami, were joint contractors.



Construction Starts on Arena Roofed with

A $2.5-million bid won the contract award last month for Pickens-Bond Construction Co., Little Rock, Ark., to build Alumni Coliseum for Eastern Kentucky State College, Richmond, Ky.

Arched laminated-timber trusses will span diagonally across the rectangular building, which measures 212 x 264 ft.

Massive concrete buttresses at the building's corners will resist the tremen-

Mileposts

Record Tower Tops Out

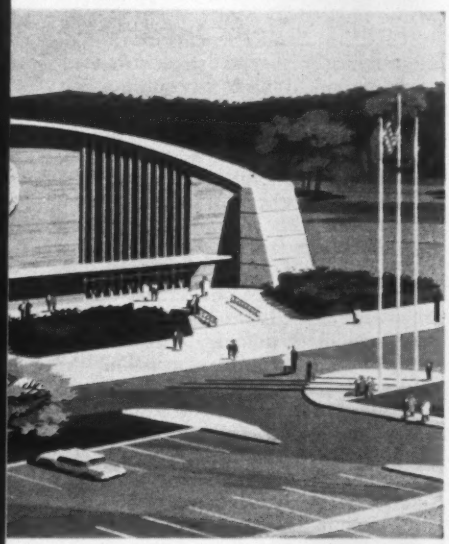
One of two 65-story-high concrete service cores of the world's tallest concrete buildings has been topped out.

The twin, circular, 60-story apartment buildings in Chicago's Marina City are being built from the center outward (ENR Sept. 14, p. 26).

Two 32-ft-dia service cores, containing five elevators and a stairwell, forming the backbone of the 128-ft-dia towers, are being built before the circular floors. A climbing crane atop each shaft places the forms, reinforcing steel and concrete. Construction crews averaged four stories (34 ft) of concrete core per week. As the core increased in height, the climbing crane was jacked from floor to floor in 8½-ft lifts.

The first four floors of the apartment buildings will contain shops and service facilities, the next 16 floors will be circular ramps for parking.

Bertrand Goldberg Associates are the architects. The contractors are James McHugh Construction Co. and Brighton Construction Co., joint venturers. The Concretor-Linden climbing cranes were supplied by B. M. Heede Inc., Long Island City, N. Y.



Timber Arches

dous arch thrust. Roof deck is wood.

Architects are Hartshern, Louis & Henry of Louisville. Ross Bryan, consulting engineer of Nashville, is the structural engineer.

Failures Spur Engineer Inspection Law

A study of recent construction failures in Michigan has led a panel of engineers to recommend to the governor changes in the state's law. The panel proposes that all building construction be inspected by registered professional engineers.

These inspectors should be engaged by the insurance company carrying the job's general contractors workers compensation insurance, the panel urged.

These recommendations came from the Governor's Special Committee of the Michigan Society of Professional Engineers after investigating the causes of collapse of a school building in Saginaw, Mich. (ENR July 20, p. 27).

The 100 x 72-ft, single-story, steel-frame building collapsed shortly before its cast-in-place gypsum roof was completed. One construction worker was killed and six injured.

The Committee recommended that the city body issuing building permits should retain consulting engineers familiar with the type of construction under review to examine all plans and specifications. In addition, the engineers would have to approve construction procedures and temporary structures on large projects and jobs involving hazardous construction.

The Committee made these recommendations after finding that there were "gross inadequacies in the structural design" of the Saginaw school and that the contractors were "remiss" in several respects. For one thing, some connections of steel members were "deficient in their installation." Also, the framing was unbraced when the gypsum roof deck was being cast.

No continuous on-the-job supervision was made by an engineer to prevent leap-frogging of construction trades that outdistanced the strength of the structure, the Committee reported.

The main framing, of hung-span construction, consisted of four rows of beams, 24 ft c-c. The beams were continuous over the columns, which were 34 ft c-c in the interior bays, 17 ft c-c in the outer. Two of the 22 columns were 4 in. square; the rest were 3-in.-dia pipe columns.

Though the bottom flanges of the beams were in compression at the columns, no lateral bracing was provided, the Committee contended. The top flanges were inadequately braced where in compression, because not all the open-web joists, spanning between the beams at 4-ft intervals, had the specified 2-in. weld to the beam flange. No moment connections were made between the beams and column caps.

There was no permanent bracing between the columns. Even the temporary bracing used to plumb the steelwork had been removed before the roof was cast, the Committee found.

Witnesses stated that nuts were missing from some column anchor bolts, and not all beam-to-column connections had been tightened. The result: a loosely hinged framework.

The Committee found that the beams, columns and base plates would have been overstressed under normal working loads. This underdesign, combined with faulty erection, caused the collapse of the building under the movement of men and equipment casting the roof, the Committee concluded.

The Committee criticized the contractors for continuing construction though they knew that it had been necessary to add steel bracing to a similar building on the project. The architect said that bracing was to have been added to the building later.

The Committee, after reviewing other construction failures in Michigan, recommended that all future construction work be closely supervised. It also noted that: "While all major failures resulting in collapse had various triggering causes, they had one like underlying factor, lack of continuous on-the-job inspection by a registered professional engineer—experienced in the type of work being done, to see that all architectural and engineering decisions had been referred back to and been checked by a registered professional engineer responsible for the design to see that the structure still met all design assumptions prior to proceeding with the next stage of construction."

Architects-engineers for the Douglas MacArthur High School were Caudill, Rowlett and Scott of Houston, Tex. J. A. Utley Co., Royal Oak, Mich., was the general contractor. The structural steel was fabricated by Camden Steel Co. and erected by T. L. Steel Erection Co.

City Readies Areas for Annexation

Winston-Salem, N.C., is about to adopt an unusual suburban utilities policy aimed at easing municipal growing pains. It would enable the city to pay part of the cost of suburban water and sewer extensions where the developers agreed to conform to the city's minimum street standards.

Two committees representing a majority of the city's Board of Aldermen have approved the policy in principle. The Board will consider it formally after it is written in ordinance form.

The policy is expected to have several beneficial effects:

- To promote industrial development in suburban fringes.
- To make future annexations less burdensome to the city taxpayer by sharing the cost with developers over a period of years.
- To encourage development close to the city ahead of outlying areas.
- To raise the quality of suburban subdivisions.
- To reduce future city problems caused by wells, septic tanks, and inadequate streets and drainage.
- To increase city revenue from suburban water and sewer charges.

The city's street standards call for 60-ft right-of-way, 26-ft pavement with roll curbs, and underground drainage.

Mere adoption of the policy would bind neither the city nor developers. They would have to reach agreement in each case. However, the policy is designed to benefit both.

The developer would get city help initially in running major water lines and trunk sewers to his subdivision. Then upon annexation later, he would recover the rest of the cost. Meantime, he would recover lesser amounts of his contribution through special charges assessed by the city and paid to him every time a new customer connected to the lines.

The city would benefit in case of annexation by having streets that already complied with city minimums. And the water and sewer lines built under the cost-sharing plan would be those that the city would have to build anyway upon annexation.

Here's how the cost-sharing system would work:

The builder would put up what a 6-in. water line and an 8-in. sewer would cost. The city would make up the difference needed to install lines of the sizes actually required. Then for the next 15 years or until annexation, the city would collect special charges from new users and pay them to the builder. Upon annexation, the city would pay the builder the rest of his share.

If the city could not share in the cost of a particular installation at the outset, the developer might get permission to proceed at his own expense with the understanding that if his development were annexed within 15 years, the city would repay the entire cost of the sewer line and all but the equivalent cost of a 6-in. water line.

The policy would apply only to feeder lines, not to laterals and street mains.

New York Plans One Water Tunnel, Awards Another

New York's Mayor Wagner last week pledged his support for a third feeder tunnel to bring water from the end of the city's big up-state aqueduct system into the heart of the city.

Tentative plans call for the third bore to originate at Hillview Reservoir, terminal point at the city's northern border for the Delaware and Catskill aqueducts. From there it would run south to the vicinity of Central Park, and then split, one branch running to lower Manhattan, the other under the East River to Queens and Brooklyn.

The city's two existing feeder tunnels also start at Hillview. One runs southwesterly for the length of Manhattan, the other goes more easterly and thence southwest through the Bronx, Queens and Brooklyn.

Estimated cost of a third tunnel on the basis of 1960 prices is $180 million.

Meanwhile, the city awarded a $16.2-million contract to Perini Corp., Framingham, Mass., and Morrison-Knudsen Co., Inc., Boise, Idaho, for construction of a water tunnel under New York Harbor's Narrows.

The 10-ft-dia bore will provide an additional 300 mgd to the Borough of Richmond (Staten Island). Completion of the 33,000-ft tunnel will roughly coincide with the 1964 completion of the Narrows Bridge, which is expected to spur industrial development on the island.

FHA Announces Details Of Fallout Shelter Loans

Regulations covering loans for the construction of fallout shelters have been issued by the Federal Housing Administration.

Lenders using Title One, the so-called home improvement loan program, must submit plans for the proposed shelter to the nearest FHA office for approval before the borrower or the contractor can proceed. If the plans are approved, then FHA issues a certificate of eligibility permitting the insured loan to be made and construction to proceed.

The lender nas the additional responsibility of inspecting the shelter and certifying that the completed job is in "substantial conformity" with the plans FHA previously approved.

Shelter design must conform to those in Civil Defense publication MP-15, with some additional FHA requirements on space and ventilation.

Under Title One, the maximum loan for single-family homes is $3,500 with a five-year maximum maturity. For multi-family units, the amount per unit can't exceed more than $2,500, with a ceiling of $15,000 and a maximum seven years to repay.

Around the World . . .

• **Tax-exempt shelters**—The Maine legislature, in special session, authorized exemption of fallout shelters from property taxes, up to $200 per occupant. The legislators also appropriated $134,500 as the state's 50% share of an underground state-government operating center.

• **Forecasting costs**—Dividend Engineering, a cost estimating service of Owens-Corning Fiberglas Corp., has gone electronic. An RCA 501 now mixes data on proposed buildings with data from a 20-year study of insulation performance and costs to obtain answers to roof and wall insulating problems within seconds.

• **More monorails**—Vienna plans to start construction of a four-mile monorail system by mid-1962. The line, which will be 25 ft above ground, will connect Margaretenguertel with Philadelphia Bridge in the southwestern section of the city. Negotiations between the city of Vienna and the Alweg and Krupp concerns call for a 50-50 split of construction costs and risks.

• **Rio's tunnel**—Bids close December 25 for the first phase of construction of a 1.74-mile traffic tunnel linking Rio de Janeiro's southen and northern residential areas. The first section, 1.3 miles long, will cost $4.7 million and will take three-and-one-half years to complete. Bids for the remaining 0.43 miles will be sought in August.

• **Structures laboratory**—Louis R. Perini, president of Perini Corp., has donated $250,000, in the form of stock, to the Massachusetts Institute of Technology School of Architecture and Planning. A laboratory in memory of Charles Perini will be established for testing model structures.

• **Chicom road**—The government of Nepal is planning to start construction in 1962 of a road from Katmandu to the Tibetan border. Communist China will finance the $9.8-million project, and will supply machines and material for its construction.

• **Aswan High Dam is behind**—High water and slow rock excavation have bogged down construction of Egypt's Aswan High Dam. First-stage construction on the project may be finished a year late because of the delays.

• **FHA goes sleuthing**—The Federal Housing Authority will arm its 75 insuring offices with paint thickness gages, to test the specified 4-mil coating on wood exteriors. For those interested in pre-testing, Wilks Precision Instrument Co., Bethesda, Md., developed the $10 pocket gage.

• **International contract**—Spanish, Japanese and Saudi contractors, in a joint venture, won a $25-million contract for the rehabilitation of the Hijaz Railway from Maan, Jordan to Medina, Saudi Arabia. The main contractors for the railway, which has been in disuse since World War I, are Awad Ben Ladin Sons, Jeddah, Saudi Arabia, and Marubeni-Iida Co. Ltd., Osaka, Japan.

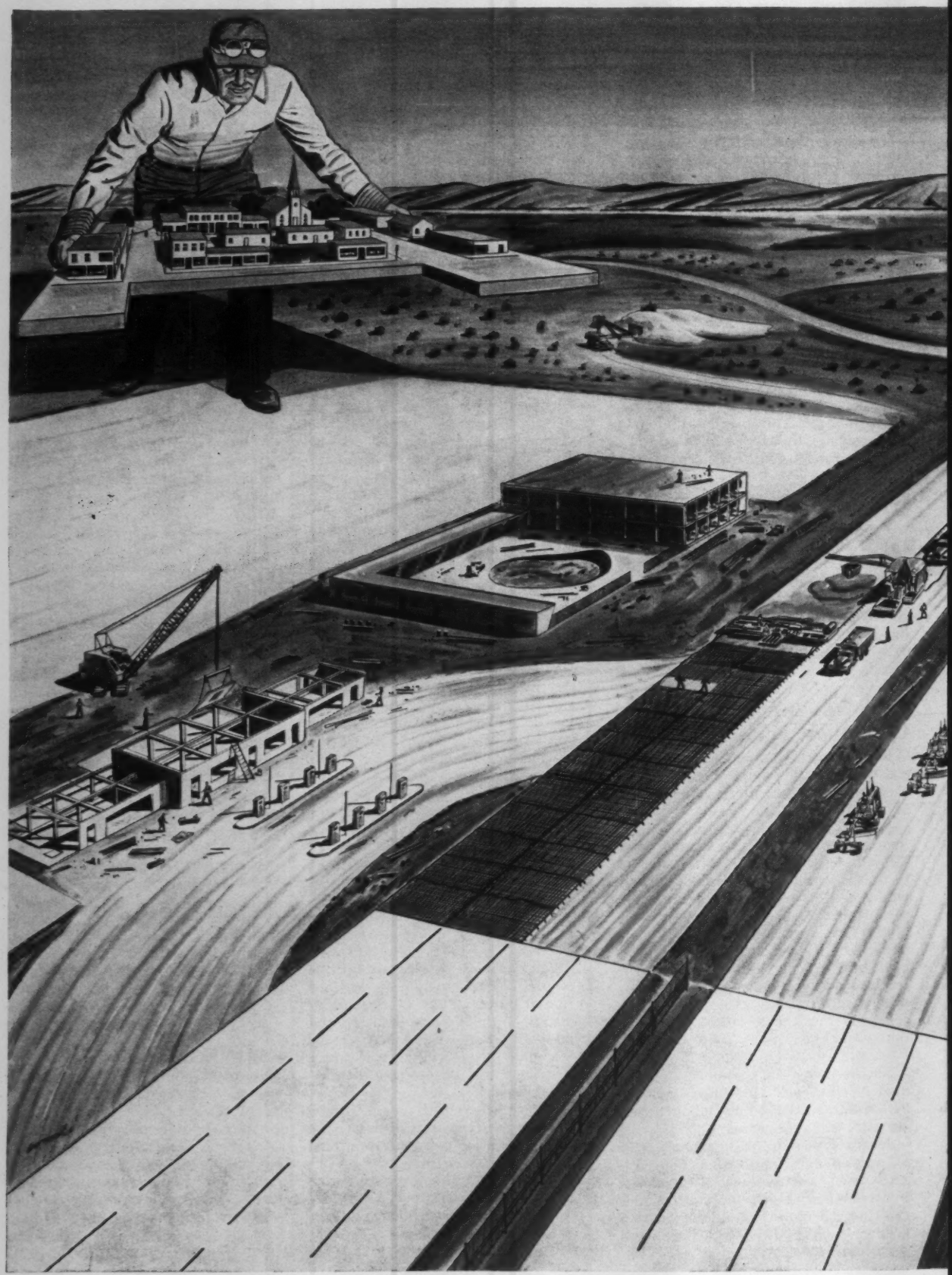
• **Whole hole**—The second Norfolk-Portsmouth Tunnel was holed through with the cutting of the bulkhead on the twelfth and final tube section. Eleven of the underwater sections are 300 ft long, and one is 115 ft long. The $22-million tunnel is scheduled for completion next summer.

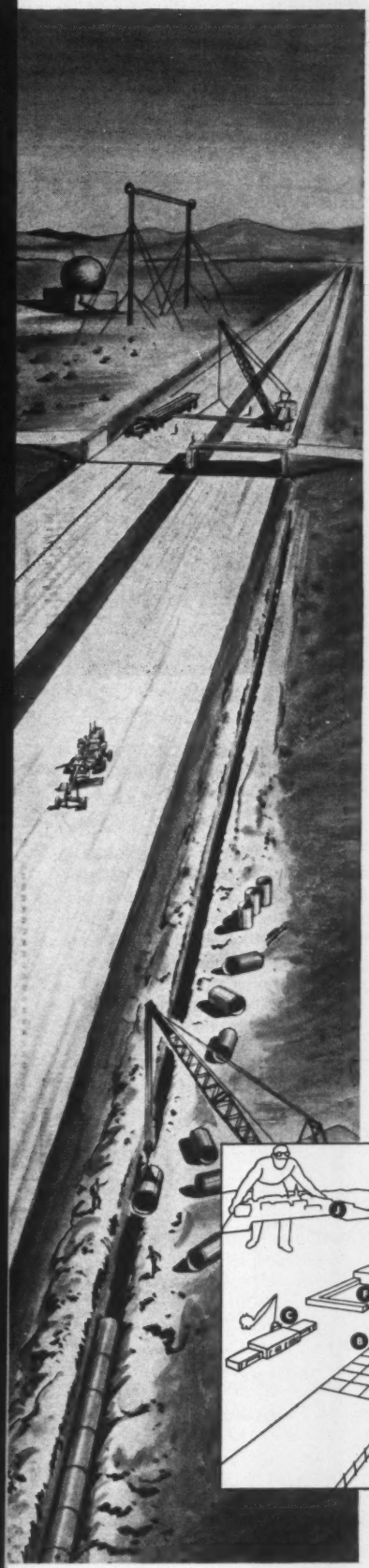
• **Miami skyscraper**—A 30-story reinforced concrete office tower, framed in reinforced concrete, will set a record as Florida's tallest building. Jose Ferre is the builder; Rader & Associates are architects. Construction should begin in downtown Miami next January.

• **Mason-Dixon Line revisited**—After two centuries of neglect, the state line between Delaware and Maryland is being resurveyed. The U. S. Coast and Geodetic Survey will retrace the line originally mapped by Charles Mason and Jeremiah Dixon.

• **Waterway proposed**—The Western Highland Rim Resources Development Association is trying to interest the Tennessee Legislative Council in a new barge canal between the Mississippi River and the Tennessee River in western Tennessee.

• **Bridge study**—Argentina and Uruguay may establish a technical commission to determine the site of a bridge over the River Platte. The proposed 30-mile bridge, which may become the world's longest, will cost $45 million. It will be used initially for motor vehicle transportation, with a railroad link, electric power line and petroleum pipelines added later.





New Highways help fill up America's wide open spaces

New highways not only connect established cities, they also create new towns and villages along their routes. As service areas and motels spring up to serve the traveler, new settlements gradually grow up around them.

CF&I—a nationwide company—makes a wide range of steel products to help build the roads and service areas that, in turn, help build a better America. This illustration shows the many roles these products play in the creation of one such roadside community.

More and more contractors now realize that no company is better suited to serve this country's growing needs than an American company like CF&I. Top quality steel products and expert on-the-job technical assistance are two of the meanings inherent in CF&I's corporate image. For complete details on these and other steel products, consult your nearby CF&I sales office or write for Catalog G-104.

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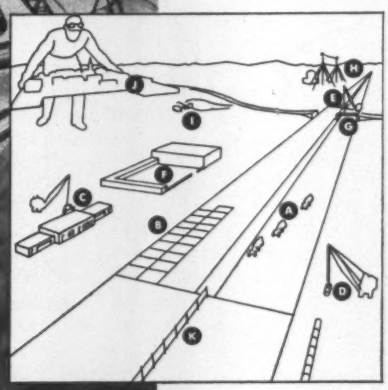
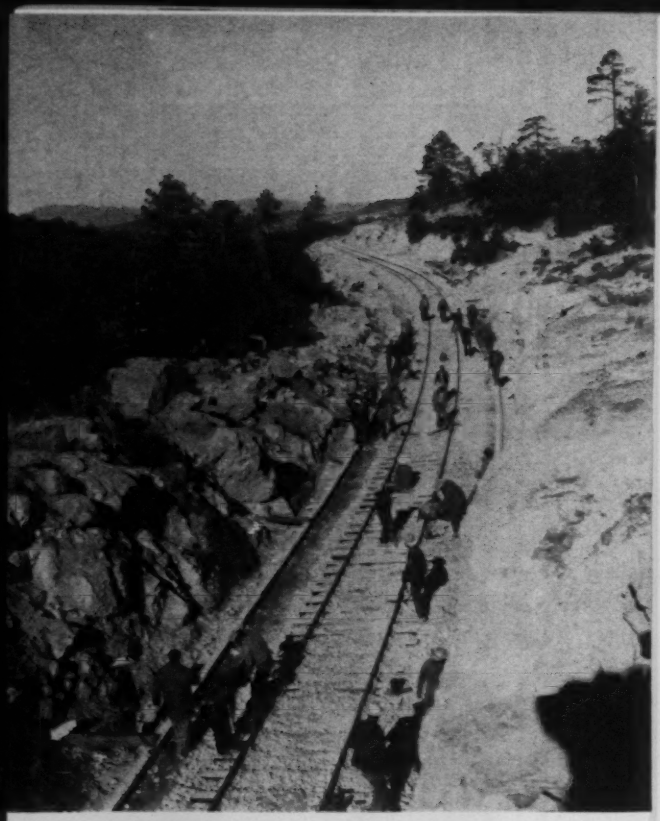
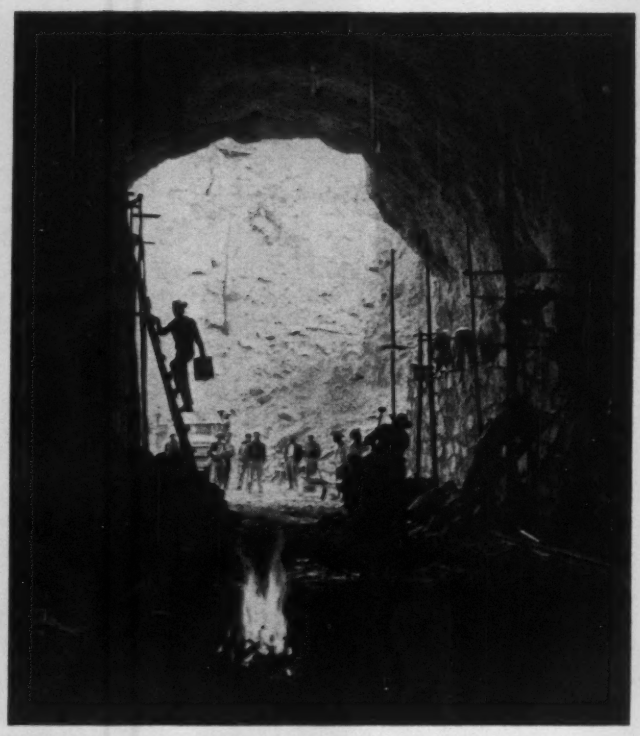


(A) CF&I Cutting Edges for road scraping and grading • CF&I Welded Wire Fabric for reinforcement of **(B)** concrete highways, **(C)** tilt-up sections and **(D)** concrete pipe • **(E)** CF&I-Wickwire Wire Rope and Slings for cranes • **(F)** CF&I-Realock Chain Link Fence for property protection • **(G)** CF&I Prestressed Strand and Wire for precast concrete bridge girders • **(H)** CF&I Galvanized Strand for guying radio towers • **(I)** CF&I Industrial Screens for sizing sand and aggregate • **(J)** CF&I Wire Products for farms and homes • **(K)** New type medium barrier consisting of Realock Chain Link Fence and Wickwire Rope Safety lines prevents out-of-control cars from hurdling divider into oncoming traffic, and also prevents them from bouncing back into their own lane.



NEW TRACKS slice through rugged mountain country.



TUNNELS mark the 572-mile line across northern Mexico.

Mexico Opens New Rail Line to

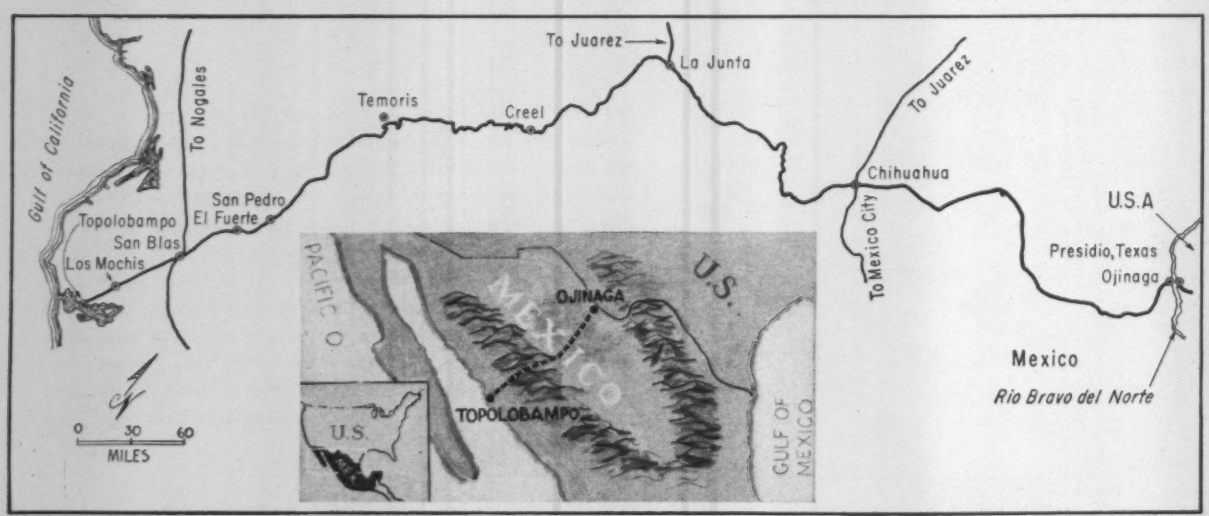
Mexico has closed the last gap in a nearly century-old project to build the shortest rail route from mid-America to the Pacific Ocean with completion of the Chihuahua-Pacific railroad.

Opening of the new route is a result of completion of a 151-mile stretch that slices through the rugged Sierra Madre Occidental of western Mexico. Between Creel and San Pedro, the line skirts the rim of spectacular Barranca del Cobre, Mexico's Grand Canyon.

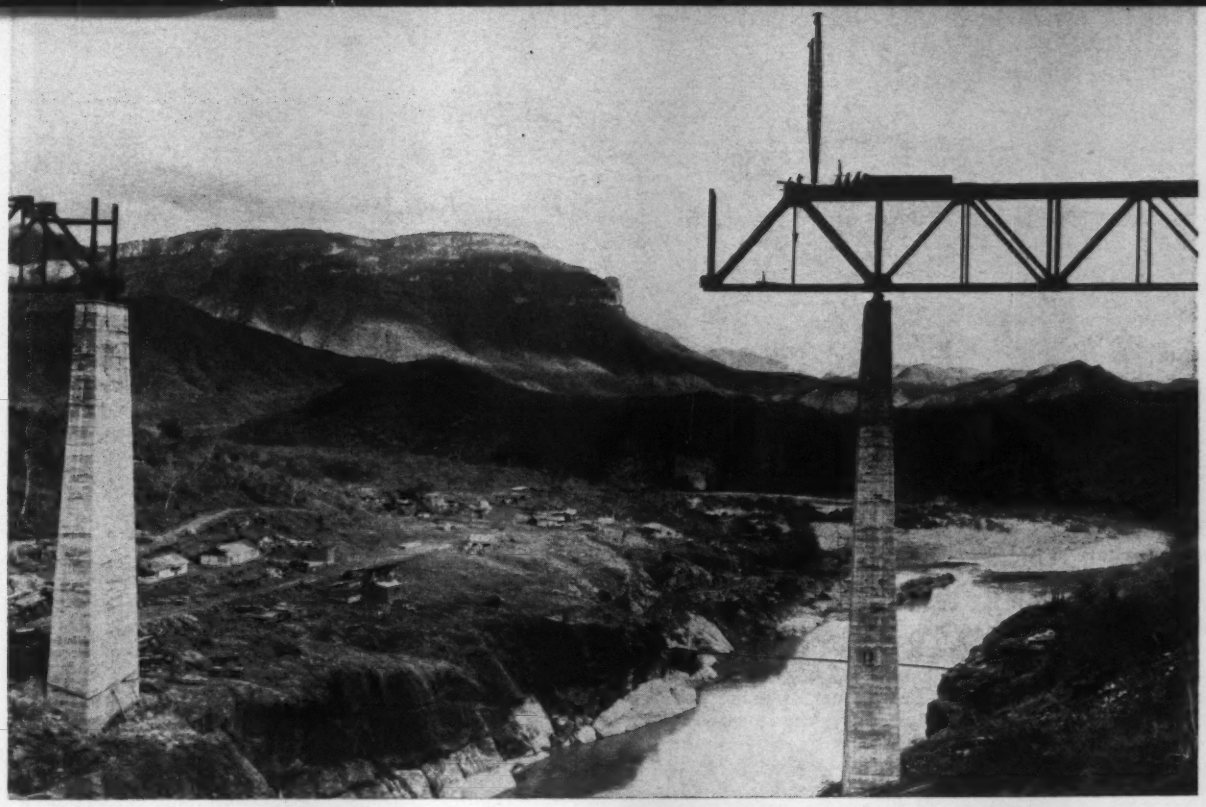
Country traversed by the new line is rough and broken. The road reaches a maximum elevation of 7,944 ft in the Sierra Madre, drops to sea level at the tiny port of Topolobampo on the Gulf of California.

To build the route, contractors moved more than 19 million cu yd of earth and rock; blasted out 72 tunnels with a total length of more than eight miles; and erected 48 bridges.

Included among the bridges are novel short-span structures of prestressed steel girders topped by a concrete trough deck; prestressed concrete structures;



CHIHUAHUA-PACIFIC railroad provides a short route from Texas and the midwestern U. S. to Pacific ports.



CHINIPAS BRIDGE towers 295 ft above the river on concrete piers, is one of several long steel structures.

the Pacific

and long steel trusses erected with a minimum of falsework.

A total of 289 miles of line has "elastic" track, comprising long sections of welded rail resting on rubber seats on concrete or wood ties.

• **Short route**—The railroad runs 572 miles from Ojinaga, Chih., across the Rio Grande from Presidio, Texas, to Topolobampo, Sinaloa (see map). A 350-mile branch line connects La Junta, Chih., with Ciudad Juarez, across the Rio Grande from El Paso. In Mexico, the Rio Grande is the Rio Bravo del Norte.

The distance from Kansas City to the Pacific coast by way of the Chihuahua-Pacific is nearly 500 miles less than from Kansas City to San Francisco.

Closure of the gap from Creel to San Pedro has taken more than 50 years, since construction was interrupted by the Mexican Revolution in 1910. Since 1940, the Mexican government has spent about $90 million—$60 million in the last three years—to complete the line and rehabilitate the rest of the route.

• **Prestressed steel bridges**—Engineers of Estructuras, S. de R. L., of Monterrey designed and supervised construction of five short bridges that incorporate prestressed steel I-beams. The design, called "FG Flanges" after inventors J. G. Vellareal, Estructuras' general manager, and the late J. F. Guerra, has been patented in Mexico and Central America, and a patent has been applied for in the U. S.

Upper and lower flanges of the built-up steel beam comprise 6x6-in. angles welded to the web plate (see sketch). The fabricator welds spiral shear connectors inside the upper flange to tie the beams and cast-in-place concrete trough together.

A welded steel plate closes the bottom flange of each beam. The lower flange flares at each end of the beam to accommodate anchors for the prestressing cable. The Swiss BBRV stressing system is used.

Engineers designed each bridge for Cooper E-50 loading. Bridges vary in size, with spans ranging from 39 to 82 ft. The longest is on a 2 deg horizontal curve, has prestressed girders 8.7 ft deep spaced 6.9 ft c-c, with a prestressing force of 100 tons per girder.

Construction procedure is simple. Crews erect the prestressed girders in pairs connected by transverse bracing. They then build the forms and cast the concrete trough, place the ballast and later lay the track.

Savings on this type of bridge, as compared with conventional I-beam spans, range up to 55% in weight of steel and up to 25% in cost.

• **Prestressed concrete bridges**—Ingenieros Civiles Asociados, S. A. (ICA) fabricated and erected prestressed concrete bridges over several deep canyons in the high Sierra. All incorporate precast beams, with an occasional span cast in place, as on the La Laja bridge (see photo).

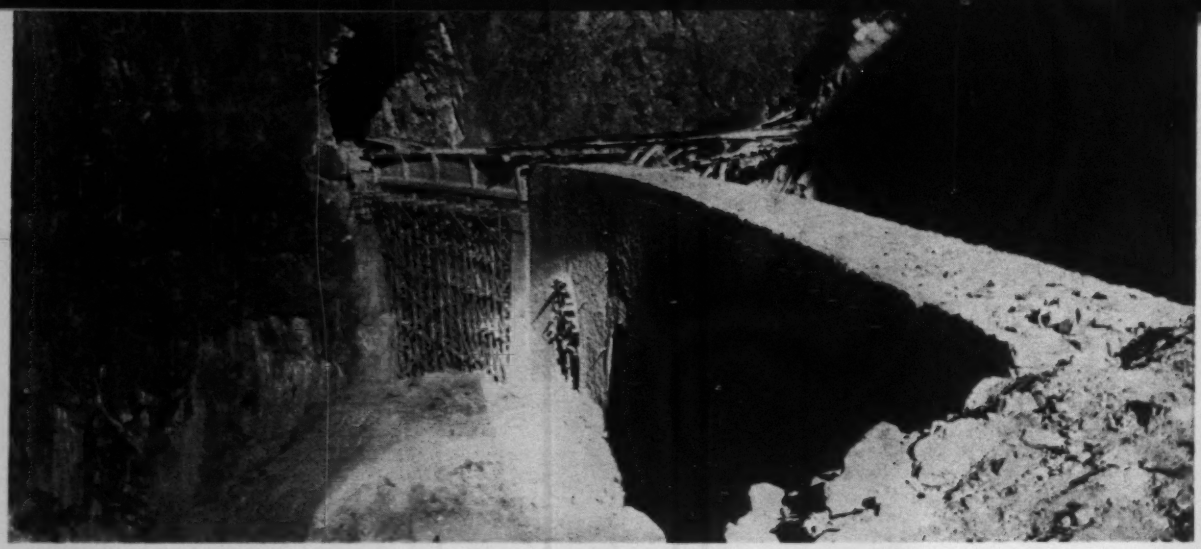
Typical prestressed beams are 102 ft long, 5 ft 11 in. deep, weigh 40 tons each. Reinforced concrete piers and abutments support the beams, three to each span. The contractor post tensioned the beams.

To place the beams, the contractor used bogies rolling on rails on top of a temporary steel truss spanning the piers. Each of the outside girders in each span was rolled out on the truss, then placed on a sand jack erected on each pier (or abutment). The sand jacks lowered each girder into final position.

Crews then removed the temporary steel truss and placed the center girder by use of bogies rolling on rails on the two outside girders. Next step was to cast and prestress the transverse diaphragms and deck.

Later, the contractor cast concrete curbs to form a ballast trough, then laid the ballast and track.

• **Major steel bridges**—Longest bridges on the new line are those crossing the El Fuerte and Chinipas rivers. Both use steel trusses in the main spans. The contractors (Estructuras, S. de R. L. and Mor-Lag, S. A.) assembled the



PRESTRESSED CONCRETE SPAN and masonry arch structure provide access to one of many rock tunnels.

trusses in three sections on the river bed, hoisted them into position.

The 1,578-ft-long El Fuerte bridge, rests on slender concrete piers towering about 148 ft above the river. There are seven welded steel girder spans, each 108 ft long. A continuous steel truss reaches over the three main spans adjacent to one bank.

Workers assembled each of the 236-ft flanking span trusses on the river bed and hoisted them into place with cranes. They then began construction of the 295-ft main span, working from the flanking spans and cantilevering from both sides toward the center of the gap. They then lifted a pre-assembled section and made the connections to close the gap.

The Chinipas bridge is 984 ft long, stands 295 ft above the river on reinforced concrete columns. The three-span, 767-ft-long continuous truss covering the three main spans was erected by the same method.

Still another steel crossing—the La Cascada bridge—comprises six welded plate girder spans resting on piers of reinforced concrete and masonry. The contractor launched five of the six spans continuously from one bank. Here's how they did it:

Steelworkers first placed sleds made of steel rails on top of the piers. They installed a winch on the river bank near the launching site, with a cable passing through a fixed sheave on the opposite bank.

Before launching, welders temporarily connected two spans on the abutment. A crew then winched the spans forward until the lead span rested on the first pier; the second span counterweighted the first. Successive spans were added as the tandem was pulled across the river, on the steel sleds.

After launching, crews cut the provisional welds, adjusted each span and made the permanent connections. The final span on the opposite side of the river was placed from that bank.

• **Tunnels**—The El Descanso tunnel on the new line is the longest in Mexico, 6,035 ft. Another, La Perla de Chicural, is on a curve, 3,083 ft long.

Contractors used conventional methods and equipment to drive the tunnels, with more hand finishing work than is customary on U. S. tunnels. Some are wholly or partially lined with masonry.

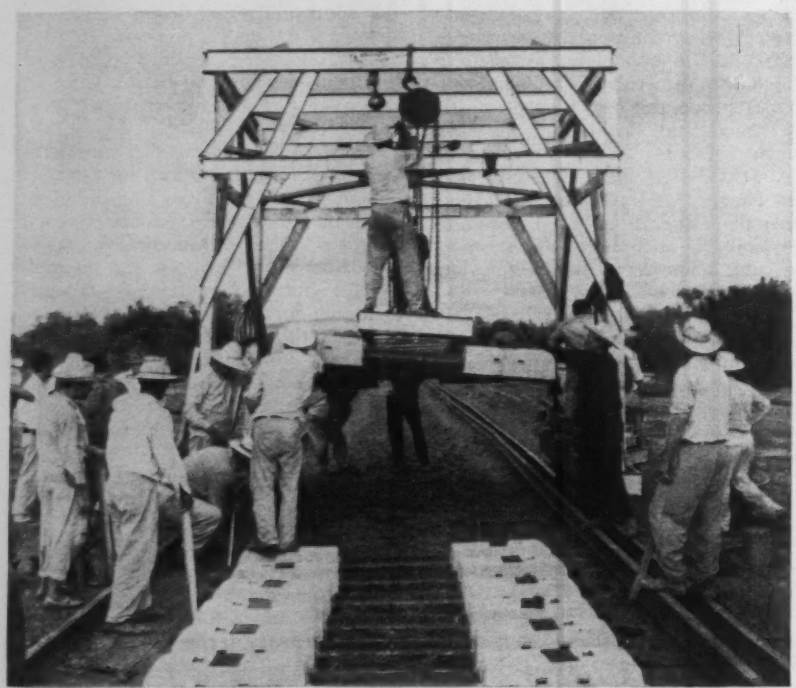
At El Lazo, between Creel and La Laja, the railroad forms a complete loop. At the point of intersection the upper part of the loop crosses a bridge while the lower part passes through a tunnel.

Snows reach a depth of more than 3 ft in the high Sierra, and cause landslides. In addition to conventional retaining walls, more than 20 false tunnels (concrete arches covered with earth) protect the line in slide-prone locations.

• **Track construction**—Construction and improvement of the line included 102 miles of "elastic" track on concrete ties, 187 miles of elastic track on treated timber ties and 120 miles of ordinary track on wood ties. Rail weighs 90 lb per ft on the main line, 80 lb per ft on sidings and in yards.

The elastic track comprises welded rail—in sections up to six miles long—resting on grooved rubber pads on concrete or wood ties. Bolts, nuts and spring fasteners that maintain constant

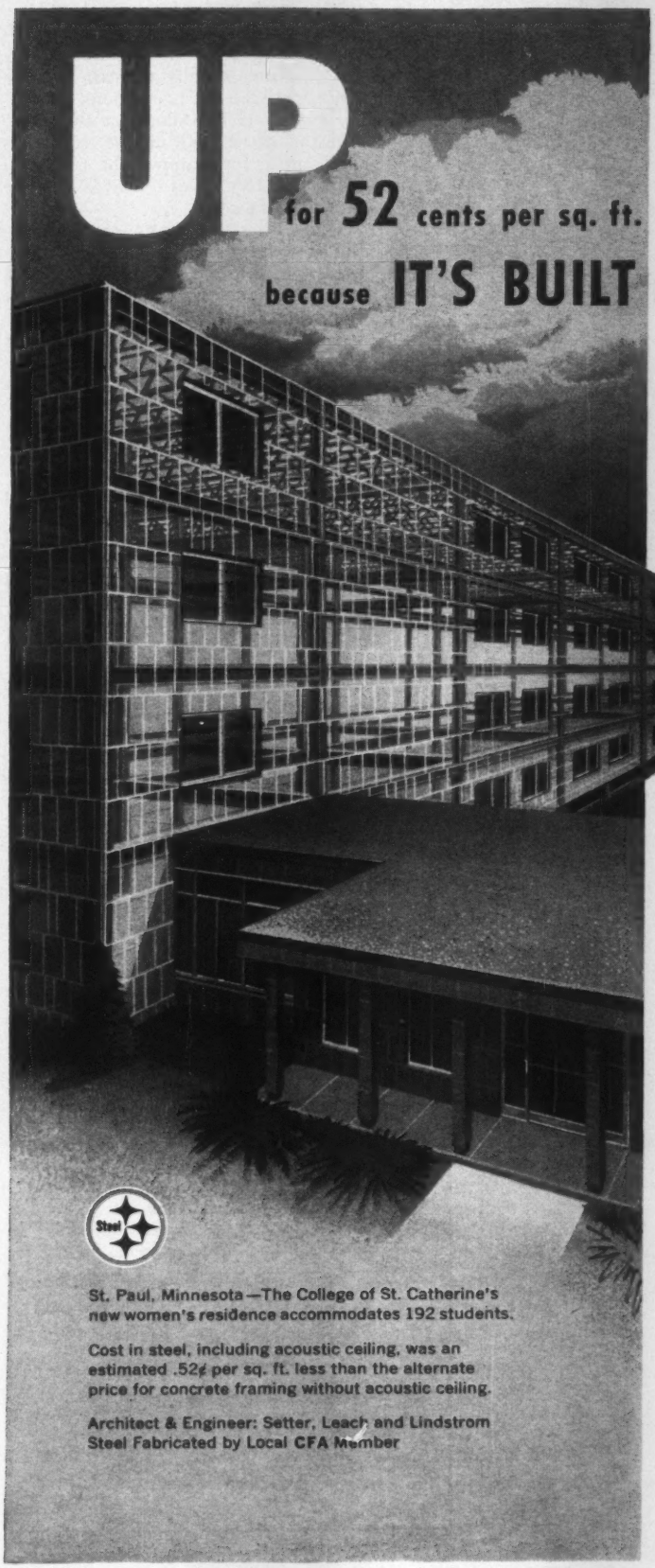
(Story continued on p. 34)



CONCRETE TIES support "elastic track" over a portion of the new line.

UP for 52 cents per sq. ft. LESS

because IT'S BUILT WITH STEEL!



St. Paul, Minnesota—The College of St. Catherine's new women's residence accommodates 192 students.

Cost in steel, including acoustic ceiling, was an estimated .52¢ per sq. ft. less than the alternate price for concrete framing without acoustic ceiling.

Architect & Engineer: Setter, Leach and Lindstrom
Steel Fabricated by Local CFA Member

Minneapolis Architect Engineer selected steel framing for dormitory instead of all other materials because of lower estimated cost.

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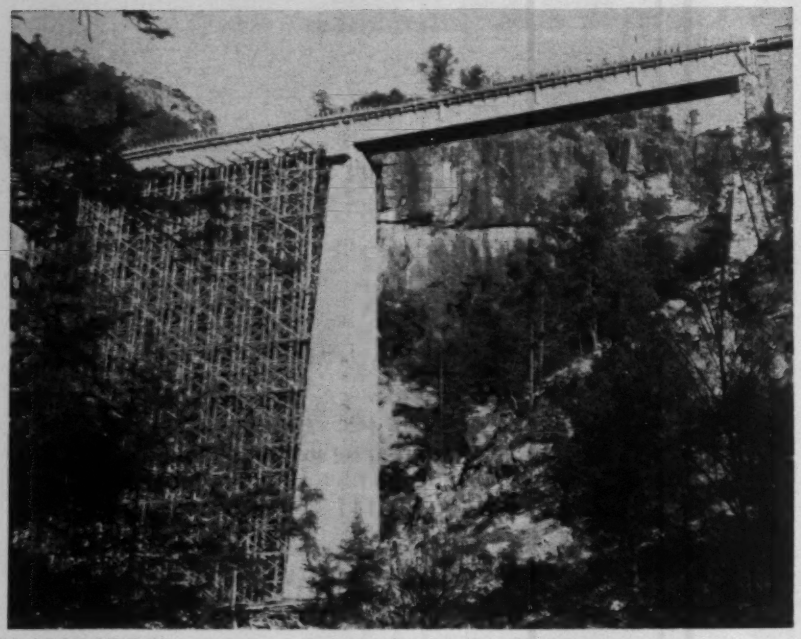


LA LAJA BRIDGE has precast and cast-in-place prestressed concrete spans.

tension hold the rail in place on concrete ties. Large wood screws and elastic clips hold the rail to timber ties.

The elastic track is said to protect rails and ties as well as rolling stock from jolts, provide a smoother and quieter ride and reduce costs of maintaining both track and rolling stock.

Concrete ties are of the RS type, two reinforced concrete blocks connected by a steel tie bar. They were laid on the western slopes of the mountains and on the coastal plain where timber is scarce.

The contractor used a traveling steel frame rolling on wheels on temporary rails to lay the ties. This unit picked up ten ties at a time from a flatcar and laid them at proper spacing.

• **Rehabilitation**—On the 160 miles of old line between Ojinaga and the city of Chihuahua, contractors upgraded embankments and drainage structures, built four new concrete bridges and replaced ties in several stretches. Between Chihuahua and Creel (185 miles), they straightened the line and improved grades, drainage and roadbed. Contractors also lined two older tunnels and finished the 4,133-ft Continental tunnel. Existing rail of varying size was replaced with 90-lb rail. They laid 43 miles of elastic track on timber ties, plus 92 miles of spiked track.

Between Topolobampo and San Pedro (76 miles), contractors upgraded the roadbed and repaired 60 bridges. Elastic track on concrete ties over the entire stretch replaced old track.

• **Economic impact**—The Sierra Madre Occidental, which parallels the Pacific coast of Mexico, forms a tremendous natural barrier to communications between the ports and farming regions along the Gulf of California and the cattle, mining and industrial centers of the interior. The new rail line effectively penetrates this formidable barrier and dramatically reduces rail distances between the two regions.

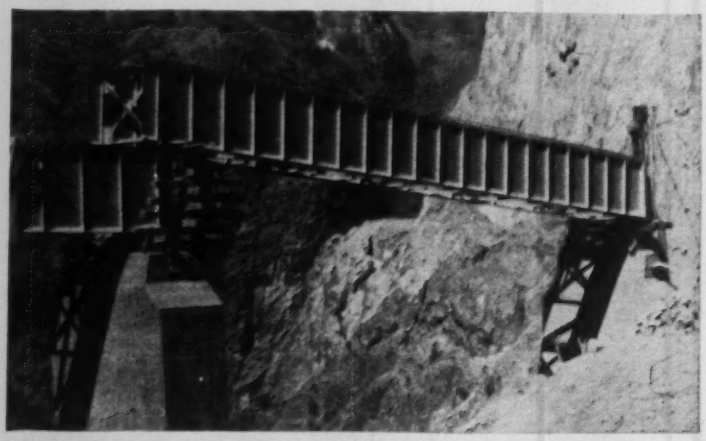
Between Hermosillo, near the coast, and the cattle and mining center of Chihuahua, for example, the reduction will be 1,180 miles or 65% of the present distance.

The Chihuahua-Pacific intersects two of the country's north-south trunk railroads: the Mexico City-Ciudad Juarez line, which runs up the central plateau from the capital to the border; and the Pacific Railroad, which follows the west coast. The C-P connects with the Atchison, Topeka & Santa Fe at Presidio, Texas.

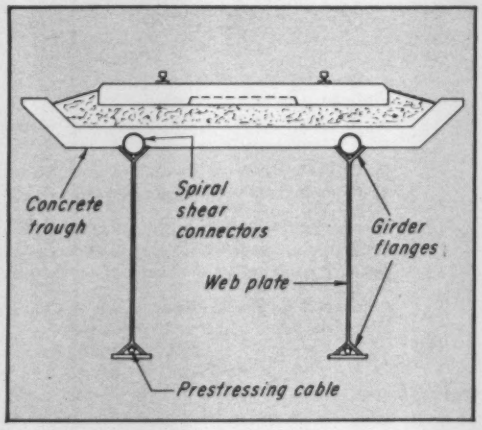
The new line will spur economic development along its length, since it will carry goods and tourists into areas rarely visited before by outsiders, including the Mexicans themselves. It may revitalize mining activity in the region of Barranca del Cobre, former source of gold, silver and copper.

Construction of the railroad is the responsibility of the Bureau of Railroad Construction of the federal Department of Public Works. Key engineering personnel include E. R. Urquidi, director; A. R. Benitez, chief of the department of construction projects; V. C. Ortega, assistant director; and Alberto Garduno, chief of the office of bridge construction.

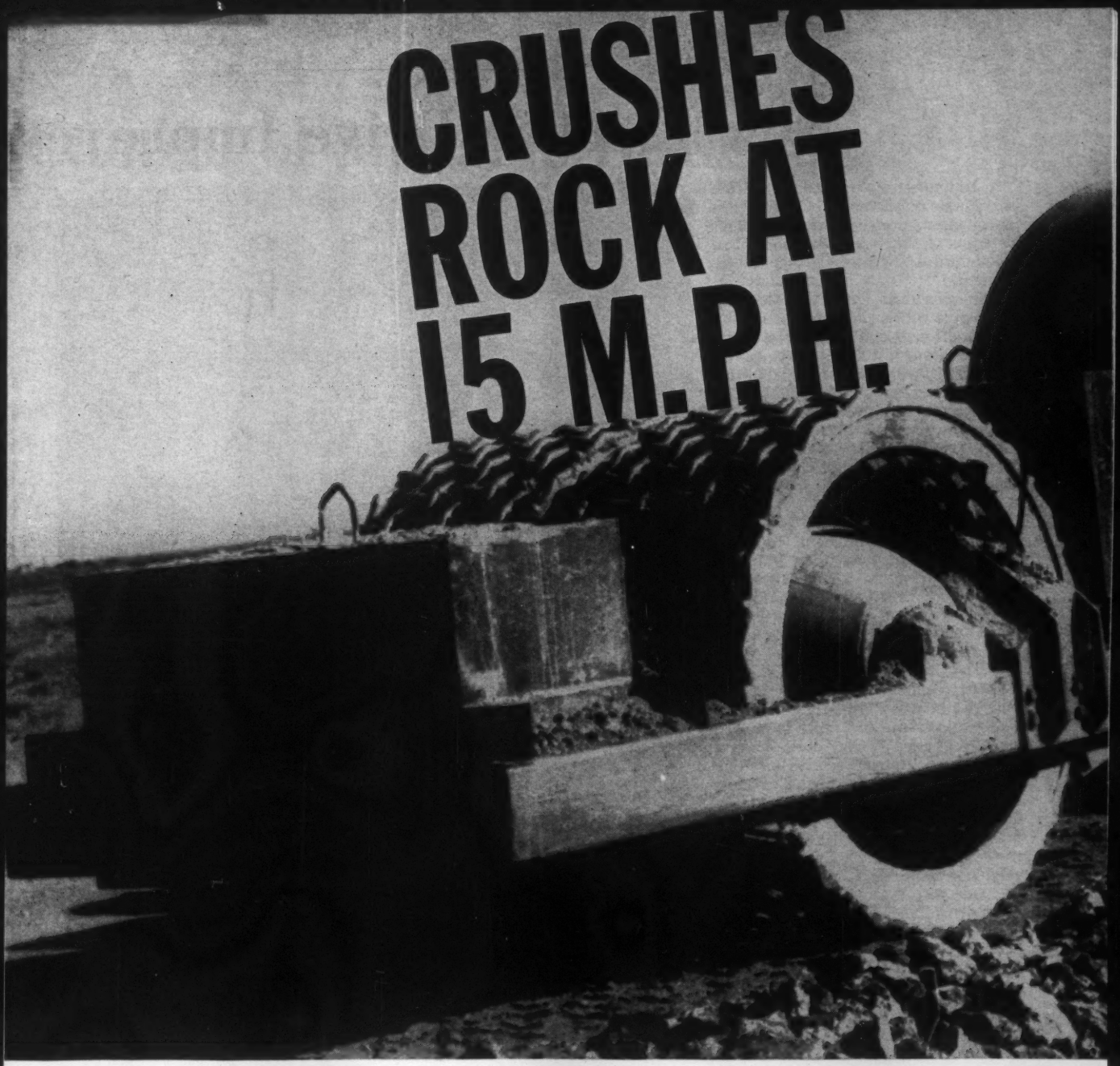
Principal contractors are Ingenieros Civiles Asociados, S. A. (ICA)—embankments, tunnels and prestressed bridge; Pavimentos, S. A.—Continental tunnel, ballast production and placing, steel bridge substructures; Constructora El Aguila, S. A. de C. V.—embankments and tunnels; Estructuras, S. de R. L., and Mor-Lag, S. A.—fabrication of steel bridges and construction of piers and abutments; Ing. Eduardo R. Du Bost and Ing. Frederico O'Reilly—stations; and Construcciones y Edificaciones, S. A.—concrete ties.



PRESTRESSED STEEL girders form another canyon crossing.



CROSS SECTION shows steel beam details.



Ever see one of these Hyster "Grid"* rollers rolling and crushing rock? It whams into the soil at a high speed for rollers. The wheel bearings have to take terrific shock loads. And they do—they're Timken® tapered roller bearings. Hyster Company engineers specified them because Timken bearings are tapered to take any combination of radial and thrust loads. The large contact area between rollers and races gives extra load-carrying capacity.

Maintenance? Hyster Company says these Timken bearings require no additional lubrication after the initial supply. They hold shafts concentric with housings, make sealing more effective. Lubricant stays in, dirt out. In fact, the Timken bearings in this roller have performed for over 5 years without trouble or replacements.

Call us . . . call for a Timken bearing graduate sales engineer when you're designing bearing applications. Our engineers can often solve your bearing problems on the spot. For the most for your money, specify "Timken". The Timken Roller Bearing Company, Canton 6, Ohio.

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*"Grid" is registered trade-mark for Hyster open-surfaced roller.

New Electric Drive Improves

A trunnion-type, single-leaf bascule lift span at Wallaceburg, Ontario, differs in appearance very little from other lift spans of this type throughout Canada and the U. S. But it is significantly different.

Dominion Bridge Co. of Montreal designed it with a new concept for the electric drive. Named the "two-motor opposed-torque drive", it is based on principles similar to those employed for electric crane hoists.

The new drive also has been proposed for a swing span in the Montreal area. It will enable remote and automatic operation of an existing manually controlled bridge.

In essence, the opposed-torque drive is an economical method of meeting basic drive requirements for movable-bridge spans by using standard wound rotor motors and control devices. It works without complicated control circuits or components or frictional braking devices, yet conforms with modern bridge practice.

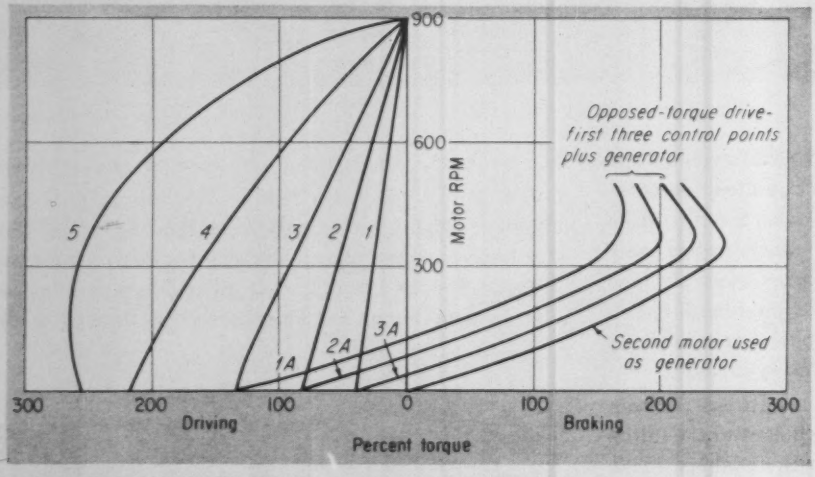
Ontario bascule bridge pioneers with opposed-torque drive.

• **Strict requirements**—Drive specifications for movable spans are exacting. The massive structure must be moved from the closed to the open position and reclosed, stopped gently and accurately in its final position. This must be done under normal operating conditions and the worst possible conditions, during which the span can be subjected to a variety of forces from wind and snow. And movements must be made with a minimum of shock to the moving and fixed structures.

Furthermore, modern bridge practice dictates that a spare motor be coupled to the machinery, ready to run, with provision for manual control, regardless of the type of operation normally in use.

Lift spans are usually balanced within close limits by counterweights (under normal operating conditions) but are left slightly "span heavy" to assist in seating. Hence, a drive that provides only "motoring torque", such as a wound rotor motor with rotor resistance control, might seem sufficient. But, variable conditions due to snow and wind pressure upset this balance. They can cause the span to overspeed, thus unloading the motor and allowing motor speed to increase correspondingly. For these conditions, a braking torque is required to restrain the motor, thus control the span movement and final positioning.

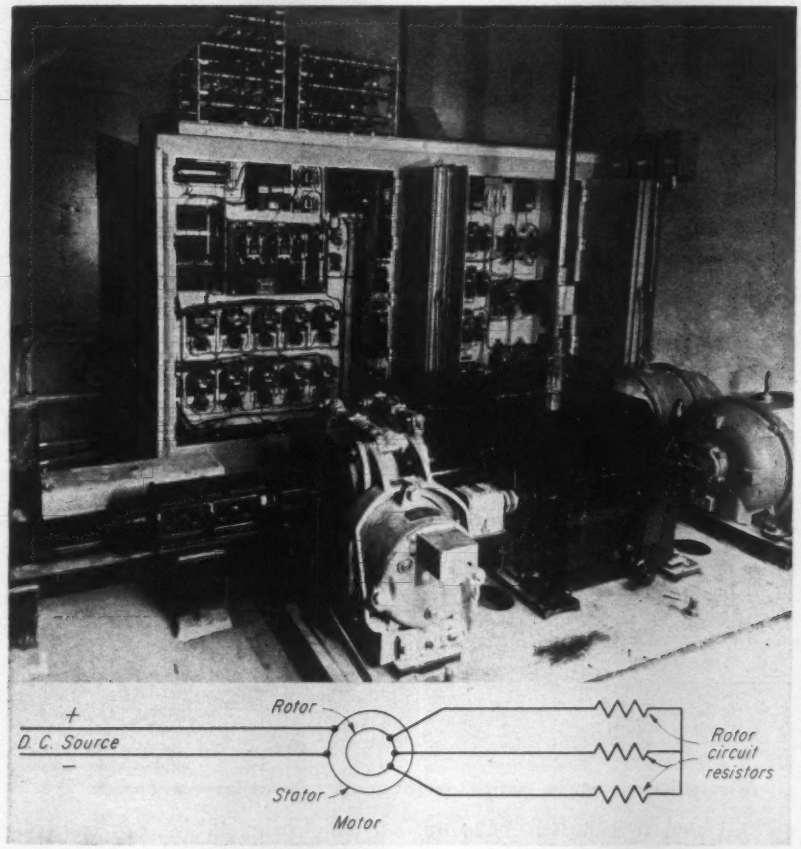
A popular method of providing this torque is to use a frictional device, but the braking effect is variable and results in erratic performance. To overcome this difficulty, Dominion Bridge decided to supply the braking torque from the spare motor.



SIMPLE DYNAMIC BRAKING, with five-point control, supplies fixed direct current excitation to the generator stator. Excessive excitation may be needed for desired braking.

• **Simple dynamic braking**—In the standard braking system, two motors rotate the lift span. One develops con-

Control of Movable Bridges



Controls include spare motor acting as generator and as a brake.

ventional motoring torque. The other (normally the spare) produces braking torque, obtained by converting the motor into a generator and dissipating the resulting power in a resistor.

This dynamic braking is accomplished by surplying fixed dc excitation to one phase of the motor stator to set up a magnetizing current. At zero speed no voltage is generated, and therefore no braking results. When the motor rotates, a generated ac voltage appears at the slip-rings and produces a braking torque. Increasing with speed, this voltage produces increasing braking torque. The speed reaches a maximum, beyond which no increase in torque can be obtained without an increase in excitation. (Increasing the excitation may cause a motor to overheat.)

• **Compensated dynamic braking**—Dominion Bridge considered the standard dynamic braking system unsuitable for bascule operation because of the wide load fluctuations and varied braking forces needed because of the weather.

Dominion Bridge adopted an improved method, now patented, in which the braking torque increases automatically with increasing speed without danger of injurious motor heating. This is accomplished by compensated dynamic braking—rectifying part of the motor rotor current and feeding it to the stator in parallel with the fixed source of excitation.

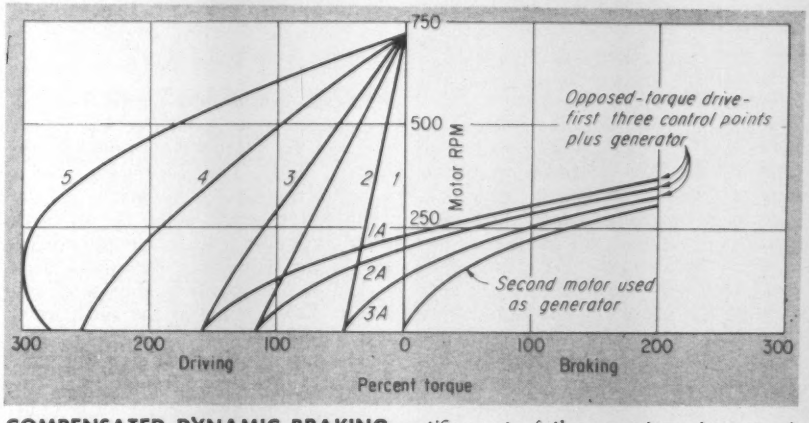
The usual bridge controller gives at least 5-point control of the drive. Three points of the controller switch in the second motor to provide the opposed-torque. Two points revert to single-motor operation as a conventional wound rotor motor to give higher running speeds between the nearly closed and nearly opened positions.

If a motor fails, manual control of one motor can operate the bascule. Manipulation of the service electric brake (normally used for holding purposes) provides braking torque as required.

• **Better and cheaper**—Although the two-motor, opposed-torque drive does not offer all the refinements of more elaborate and costly schemes, it completely fulfills the basic operational requirements. It conforms to the modern bridge practice of providing a second motor, but puts it to work instead of giving it a free ride. It also provides a means for manual control and eliminates the need for a friction device to obtain braking torque.

The new drive is only slightly more costly to install than a friction-brake scheme. But it is superior in performance, simpler to operate and requires less maintenance.

The bridge at Wallaceburg with two 20-hp motors, has just been put into operation. No figures as to operating costs are yet available, but tests reveal that the performance characteristics closely follow the design performance curves.



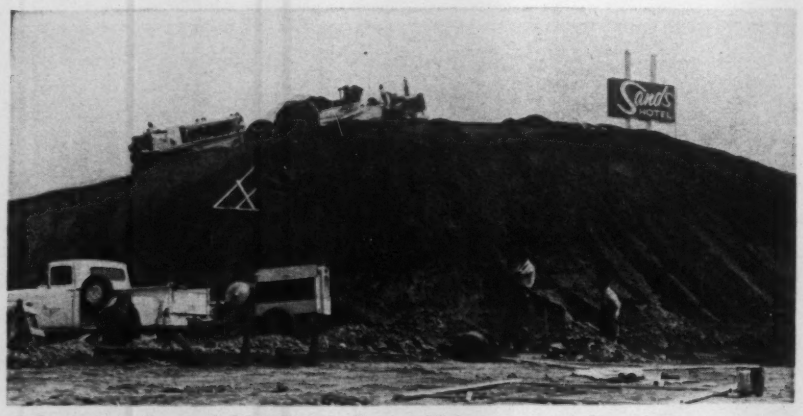
COMPENSATED DYNAMIC BRAKING rectifies part of the generator rotor current and feeds it to the stator so that braking increases automatically with speed.

Three Domes Formed on the Ground

Three contractors building domes in widely separated locations used an unusual construction technique. They all built the domes on the ground.

The concrete dome capping San Diego's new Circle Arts Theater was built at its final elevation. After it was cast, the ground was removed from under the dome as was Albuquerque's civic auditorium (ENR Sept. 27, 1956, p. 36).

Topping the Warner Auditorium in Anderson, Ind., is a concrete dome that was jacked into place after it was cast on the ground below. In East Meadow, N.Y., a timber dome was fabricated on the ground and lifted into position by crane.



1. Contractor piles earth 36 ft high to form mold for concrete shell . . .

. . . After casting concrete he excavates mold through archways between supports.

• **Cast in place on the ground**—Five thrust blocks support the San Diego theater's 190-ft-dia pierced concrete shell. The dome arches between the supports, forming 9-ft-high openings.

The contractor, Peter Kiewit Sons', of Arcadia, Calif., could have formed the dome with an inflated balloon, timber falsework or an earth mold. The balloon was too expensive. There was little difference between the estimated cost of timber and earth forming; so Kiewit decided to use an earth mold, because it can be shaped more accurately than falsework.

Kiewit built the 20,000-cu yd earth mold on the ground, borrowing sand and clay from another part of the site, and after watering it achieved 85% compaction under the weight of scrapers.

Surveyors' levels controlled the curvature of the 36-ft-high mound, and hand shovels were used to finish the surface. The earthmoving crew took 24 days to complete the mold.

Next, the contractor cast a skim coat of concrete over the mold. He oiled its surface before laying dome reinforcing steel and applying lightweight, 3,000-psi concrete pneumatically in five alternate segments.

The 4-in. concrete dome thickens to 16 in. at the thrust blocks, and edge beams stiffen the arches between the supports. The thrust blocks rest on footings in a heavily cemented soil that carries a 10,000-psf design load.

After the concrete had cured, the contractor dug a trench through one arch to the center of the dome. He then removed earth from under the dome, starting at the center and working outwards. The concrete skim coat broke away easily and was removed with the earth.

The cost of forming and concreting the 80,000-sq ft dome was $4.30 psf. This was higher than estimated, because of overtime work to meet the theater's opening date.

Next to the theater another domed building houses the rehearsal stage, dressing rooms and offices. This 78-ft-dia dome was built of wood framing with a stucco finish.

Richard Wheeler and Associates were the architects, and A. J. Blaylock and Associates the structural engineers. Both firms are from San Diego.

• **Precast—jacked into placed**—Lift-slab techniques were applied to the 244-ft dome of the Warner Auditorium at Anderson, Ind. The contractor, Lewis Construction Co., of Anderson, cast the 1,500-ton concrete dome on an earth mold at ground level, in the same manner as the San Diego dome and then jacked it into position atop steel columns. Lewis removed the earth mold after raising the roof.

The first construction step was erection of thirty-six 26-ft-high steel columns. Then Lewis cast a 25 x 44-in. concrete ring girder on the ground. The columns and girder were both on a 122-ft radius, with the columns projecting through the concrete. Steel collars inserted in the girder at each column were used at a later stage of construction when jacks gripped the collars to raise the dome to the column tops.

After casting the ring girder, the contractor piled 38,000 cu yd of earth inside it to form a 40-ft-high mold. Surveyors kept the surface of the mold to within ¾ in. of the calculated contours. The mound was covered with 1-in.-thick slabs of expanded polystyrene before the reinforcing steel was placed.

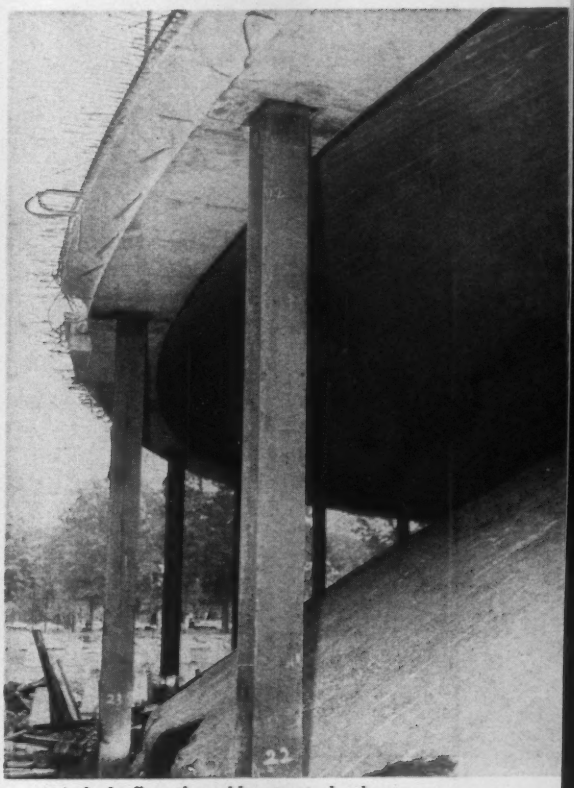
Lewis cast lightweight 4,000-psi concrete in 16-ft-high bands around the 4-in.-thick dome. The polystyrene adhered to the concrete to form permanent insulation for the dome soffit.

The next construction step was to prestress the ring girder before raising the dome. Three rings of cables, lapped 8 ft at the quarter points, prestress the girder. Each cable consists of forty ¼-in.-dia steel wires.

Since friction losses were incurred stressing the 200-ft cables around the curve, the movable cable ends were overstressed to compensate for the loss and later released to a lower force.

Are Raised on Different Lines

2. Huge concrete dome and ring girder cast on polystyrene lining . . .



. . . is jacked off earth mold onto steel columns.

Lifting the dome was similar to a conventional lift-slab operation. Jacks atop the columns were connected to the collars in the ring girder. A single console synchronized the rate of lifting of the 36 jacks. Wedges were welded between the collars and shear plates on the column flanges after the dome was raised into position. Afterwards, Lewis cast a cantilevered canopy against the outer face of the ring girder.

For roofing, the top surface of the concrete was sprayed with an asphalt base coat. Glass fiber was brushed into a second coat of sprayed-on asphalt-clay emulsion. Two finishing coats of white asphalt paint later were applied over a third asphalt-clay emulsion application.

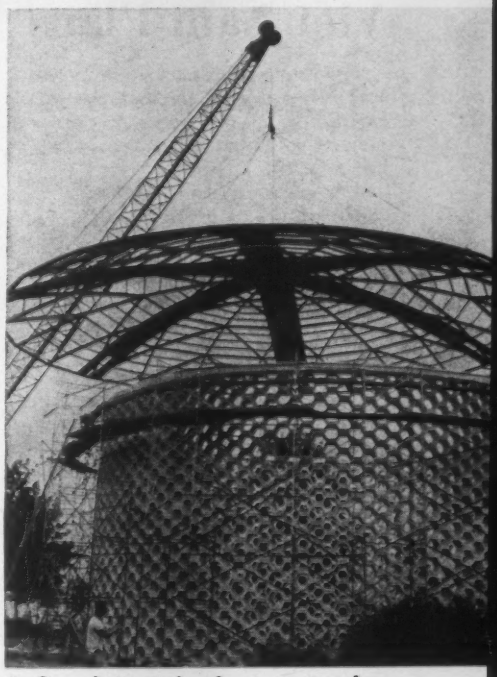
Johnson, Ritchart and Associates, architect and engineer of Anderson, estimates that the lifting technique was one-third cheaper than casting the dome in place on timber falsework. Total cost of the dome, including columns, ring girder, insulation and removing the earth mold was $3.16 per sq ft.

• **Prefabricated – placed by crane** – A shallow dome, framed and sheathed in timber, tops the circular Temple Emanuel in East Meadow, N. Y. The 62-ft dia by 86-in.-high dome was fabricated on the ground alongside the building and then lifted by crane.

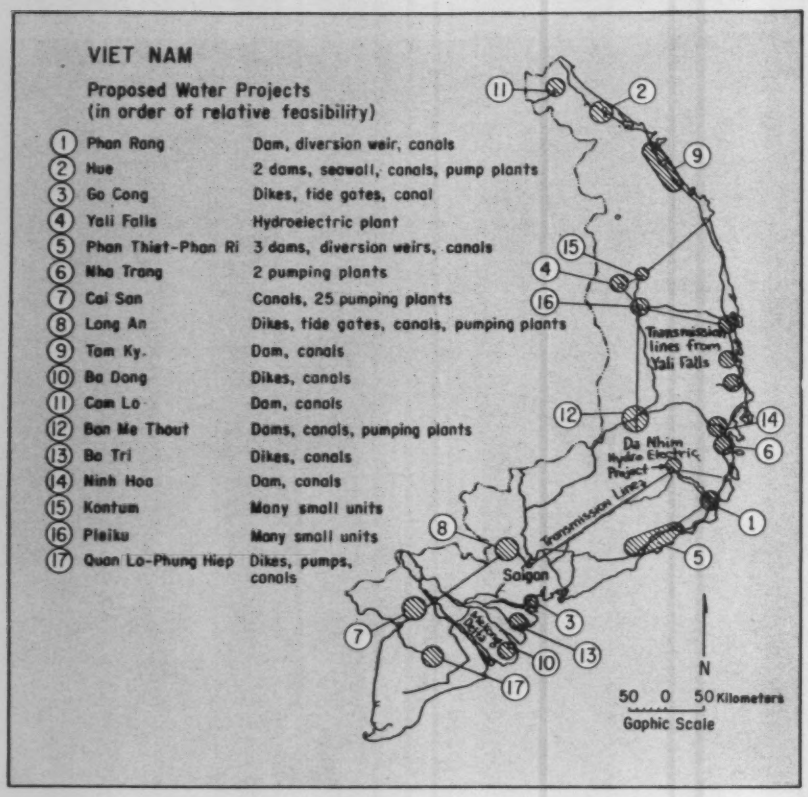
The dome was assembled on a 6 x ½-in. steel-plate tension ring. Top surfaces of the 2x8- and 2x4-in. structural members were sawn to fit the dome's curvature. Before lifting the roof, the contractor nailed on bands of sheathing to stabilize the dome. One-inch-thick tongue-and-groove boards were laid after the dome was in place. The roofing consists of a base sheet, glass fiber in asphalt emulsion, and an aluminized asphalt-paint finish.

The 33-ft-high circular wall looks like a decorative facade but is in fact a loadbearing wall. Precast half-hexagonal units laid up in mortar give it a honeycomb effect. The 2,100 hexagons are glazed separately with colored glass.

Davis, Brody and Wisniewski were the architects and Wisenfeld, Hayward and Leon the structural engineers. Both are New York City firms. L. A. Wenger Construction Co. of Syosset, N. Y., was the general contractor, Timber Structures, Inc., Ramsey, N. J., fabricated the dome.



3. Crane hoists timber dome atop temple.


VIET NAM
Proposed Water Projects
(in order of relative feasibility)
1 Phan Rang — Dam, diversion weir, canals
2 Hue — 2 dams, seawall, canals, pump plants
3 Go Cong — Dikes, tide gates, canal
4 Yali Falls — Hydroelectric plant
5 Phan Thiet-Phan Ri — 3 dams, diversion weirs, canals
6 Nha Trang — 2 pumping plants
7 Cai San — Canals, 25 pumping plants
8 Long An — Dikes, tide gates, canals, pumping plants
9 Tam Ky — Dam, canals
10 Ba Dong — Dikes, canals
11 Cam Lo — Dam, canals
12 Ban Me Thout — Dams, canals, pumping plants
13 Ba Tri — Dikes, canals
14 Ninh Hoa — Dam, canals
15 Kontum — Many small units
16 Pleiku — Many small units
17 Quan Lo-Phung Hiep — Dikes, pumps, canals
Transmission lines from Yali Falls
Da Nhim Hydro Electric Project
Transmission Lines
Saigon
Mekong
N
50 0 50 Kilometers
Gaphic Scale

Consultants see control of monsoon rains as . . .

Viet Nam Plans Water Projects

The southeast Asian nation of South Viet Nam awarded contracts for detail-engineering on two water development projects to Ralph M. Parsons Co., of Los Angeles. The projects are:

- A diversion dam, regulation weir and 35 miles of canals at Phan Rang to reclaim the tailwater of the Da Nhim power project for irrigation (ENR Jan. 19, p.30).
- Dikes, tide gates and a 25-mile irrigation canal at Go Cong, 30 miles south of Saigon.

Both projects are high on the list of those proposed in a water resources master plan recently drawn up by Parsons for the entire country of Viet Nam. The scope of the plan includes all water projects too large to be handled on the local level but small enough to be contained within the country's borders. Control of the great Mekong River, only the delta of which is in Viet Nam, is being studied separately by a United Nations commission.

Parsons' 18-month study shows that the country has plenty of water, but that it comes inconveniently concentrated in two monsoon seasons.

In the interim dry seasons, large tracts of otherwise arable land lie either parched or spoiled by salt water from the South China Sea.

The goal of the master plan is enough water control to grow two crops a year and to bring new acres into production through irrigation and salt marsh drainage. It gives in detail 14 projects affecting nearly a million acres. For these projects it estimates costs and financial benefits. If all the projects are carried out, total cost will be around $3.4 billion.

Three other projects are suggested, details for which must await further study, and six others that hinge on either the Mekong River study or the Da Nhim project.

No time schedule is suggested, but the master plan does rank the projects in order of feasibility, based primarily on how soon each project will pay out after construction. The order is subject to revision by political considerations.

Expanded Waste Facilities Considered for Winnipeg

Two reports to the Metro Waterworks and Waste Division of Winnipeg call for that Canadian city to spend $30 million on sewage treatment facilities over the next five years.

To reduce pollution of the Red River and its tributary, the Assiniboine River, the reports recommend:

- Expansion of facilities for secondary treatment of sewage at the Old Kildonan plant north of the city and:
- Construction of two systems of lagoon disposal, one west and one south of the city.

Old Kildonan plant expansion with additional interceptor and trunk sewers will cost $17 million. Design will take 17 months, construction 25 months. The two sewage lagoons and intercepting sewers—estimated cost, $13 million—will take about eight months to design and 12 to 18 months to build.

The reports, one by Underwood MacLellan & Associates, Winnipeg, and one by James F. MacClaren Associates, Toronto, are framed to meet the demands of increasing population over the next 20 years. They ask for expenditure of $40 million.

Development Credit Goes For Paraguayan Highway

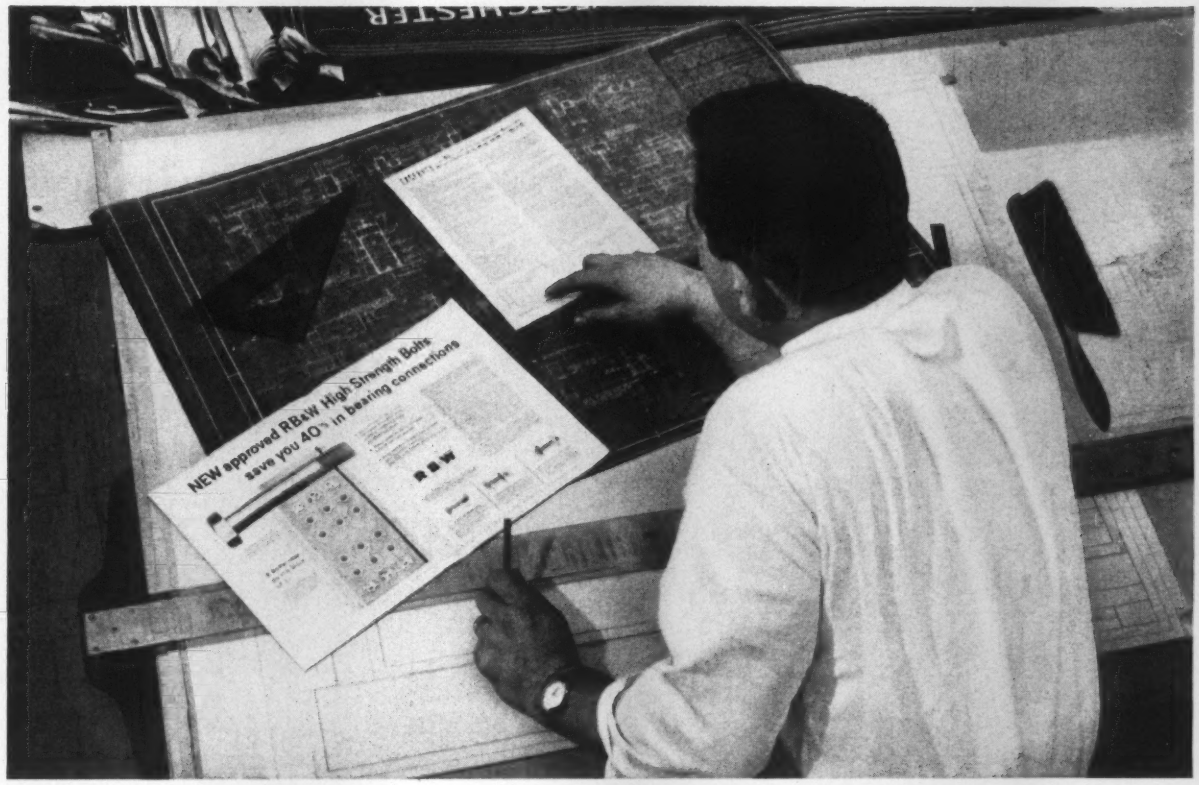
A $6-million credit goes to Paraguay from the International Development Association for highway improvements.

Most of the funds will be used for making an all-weather road of the country's most important highway, which links Asuncion, the capital, with Encarnacion, the second largest city. Imports of road maintenance equipment will use $1.1 million of the credits.

The Asuncion-Encarnacion highway is of all-weather standard for only 40 miles, on the stretch between Asuncion and Paraguari. The remainder of the route is very narrow in spots and has a gravel or dirt surface. Some sections are impassable during the rainy season.

Width of the roadway from Paraguari to Encarnacion will be increased to 20 ft, with a bituminous surface. Other improvements will include the building of a 1,100-ft-long bridge over the Tebicuary River at Villa Florida. The only vehicle crossing there now is one primitive ferry. Contracts will be awarded after international competitive bidding.

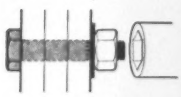
Construction is expected to take about four years to complete. Repayment of the credit will begin in 1972, after a 10-year period of grace.



Structural engineers see new way to reduce cost of steelwork

An important change in the specification for structural joints permits a designer to work out economies in shop assembly and field erection costs right at his board.

No longer does the specification consider high strength bolts and rivets equal, except in friction-type joints. In the predominant bearing-type joints, the tensile/shear ratio is changed to take advantage of the new large-head short-thread bolts. Two of these do the job of three rivets; or replace three of the regular high strength bolts. Their short thread length excludes shear planes from passing through a threaded section. Thus, the full shank section is available to develop specified shear strength.



Moreover, only *one* hardened washer is used . . . under head or nut, whichever is torqued in tightening. Obviously, by eliminating one-third the holes, one-third the bolts or rivets, and one-half the washers, shop fabricators can save up to 40% on connections. Field erectors can realize savings similar to these.

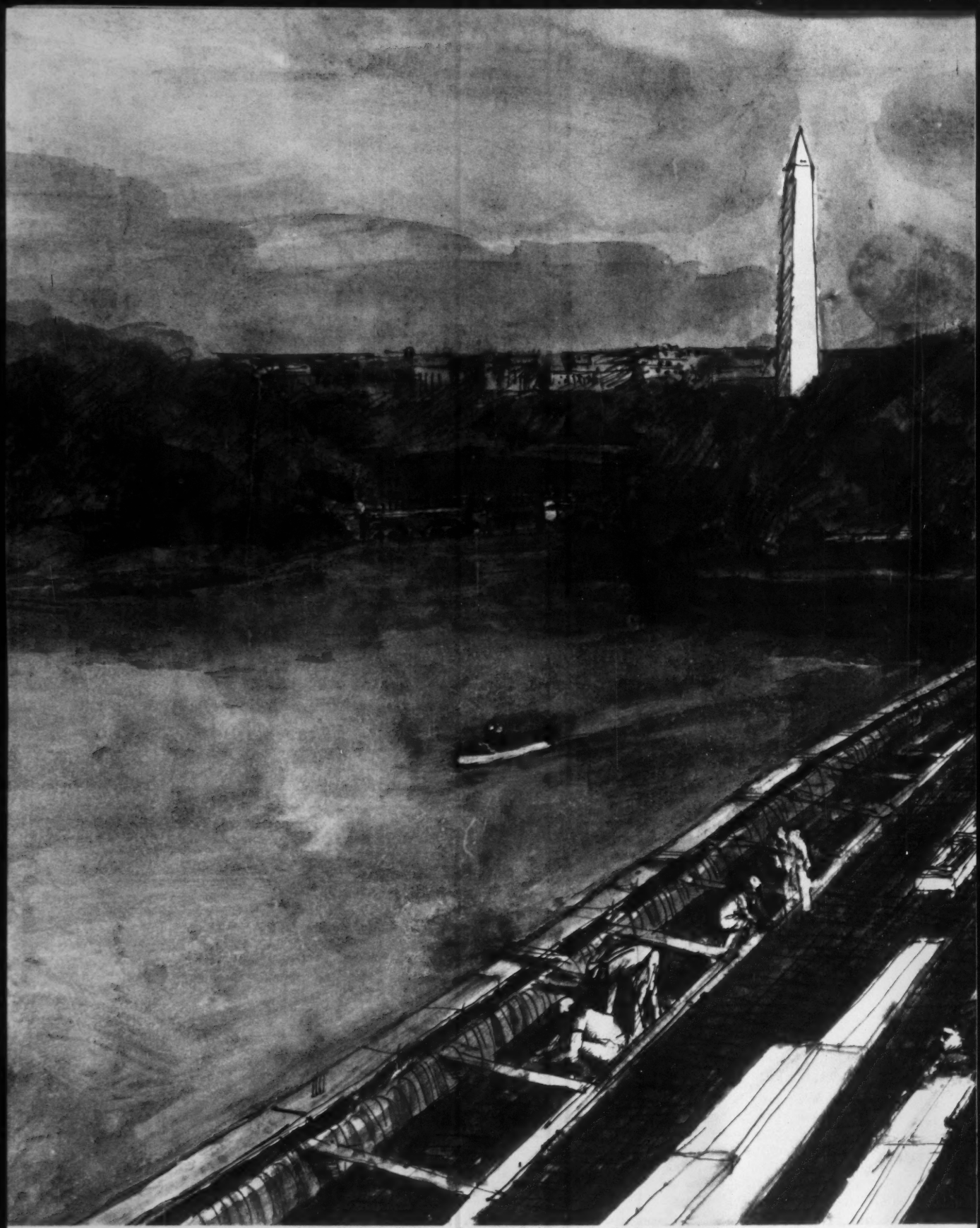
But these savings won't be completely realized, and reflected in lower costs, until *the designer puts this new fastening improvement to work.*

So, if you're a structural engineer, plan now on the economies in the new RB&W High Strength Bolt. And if you're a fabricator or field erector, count on a full size range of these bolts from RB&W . . . all with traditional RB&W quality and certified conformance to ASTM A325 specification. For more data, write Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y.

R B & W
117th year

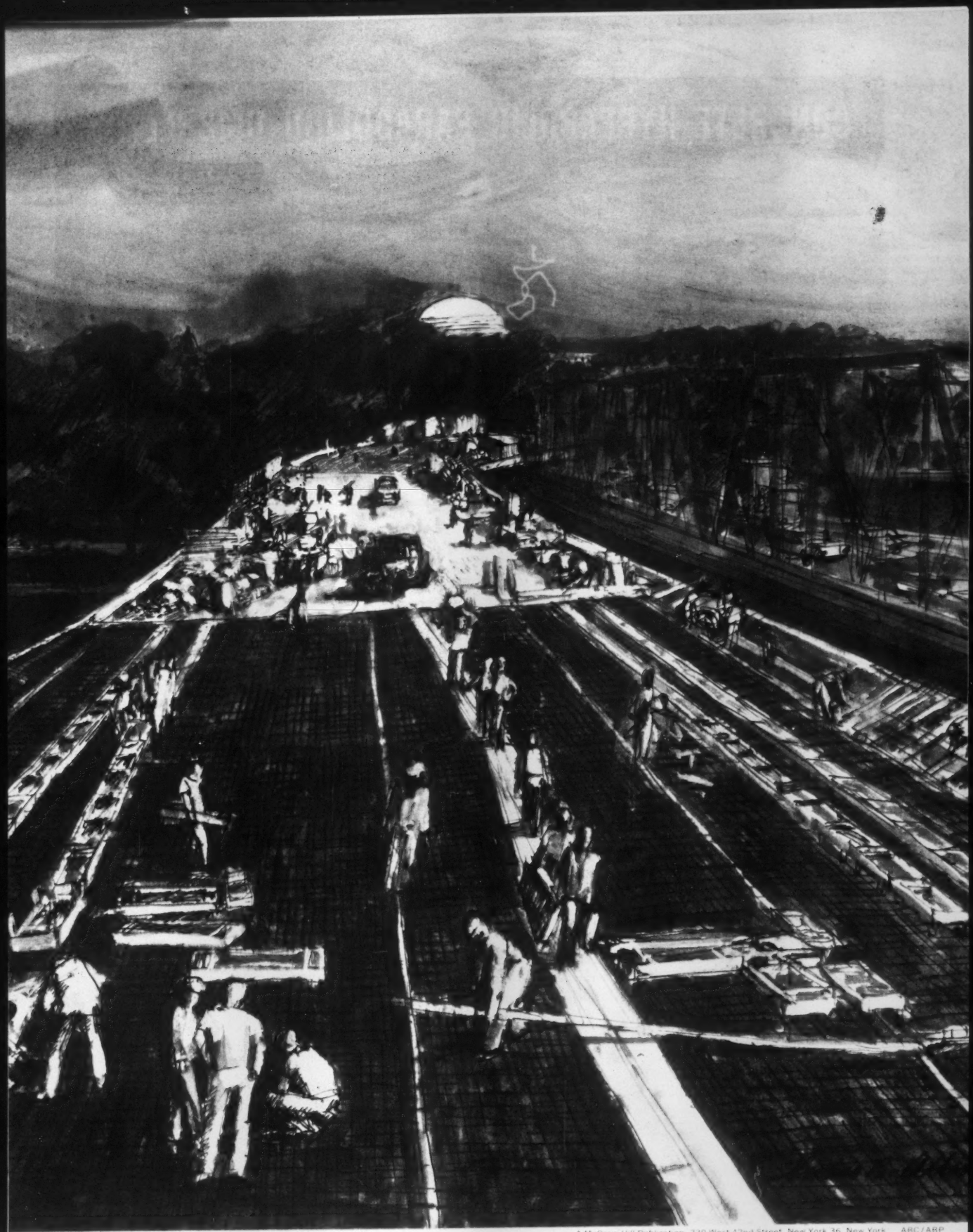
Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Sales office and warehouse at: San Francisco, Calif. Sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas. Sales agents at: Cleveland; Milwaukee; New Orleans; Denver; Fargo.

LARGEST INDEPENDENT PRODUCER OF HIGH STRENGTH BOLTS FOR CONSTRUCTION



Where all is not quiet on the Potomac. Traffic southbound from ever-burgeoning Washington will soon cross the historic river on this sleek new bridge. Howard, Needles, Tammen & Bergendoff are consultants to the District of Columbia Department of Highways & Traffic. General contractors are Schacht Steel Construction, Inc.

In building and construction, if you're important, you read



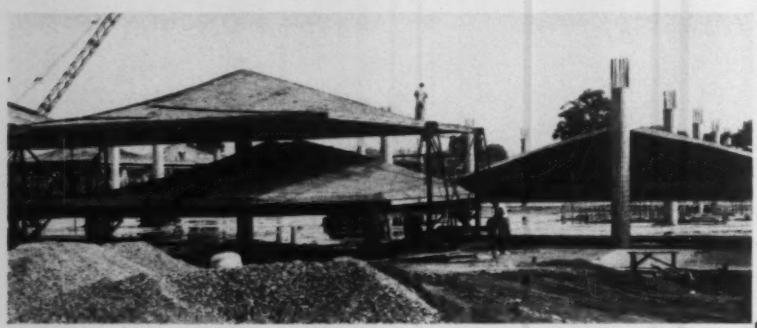
A McGraw-Hill Publication. 330 West 42nd Street, New York 36, New York ABC/ABP

Engineering News-Record, advertise in it...or both.

CONCRETE HYPERBOLIC PARABOLOID UMBRELLAS

Workmen place concrete for one of 45 umbrella shells at new Latham, N. Y. shopping center. Each shell is 47′ square, 2½″ thick and weighs 91,500 lbs. Roof exterior received a rough float finish and application of built-up roofing. The completed structure is 236′ x 425′ and provides 100,000 sq. ft. of floor space.

Four sets of forms were used for the entire job. Each form-half weighs 5½ tons and was raised and lowered with simple and efficient rolling jacks. After sufficient curing of the concrete, form-halves were lowered and moved to the next location. Mechanical trades moved in quickly behind the roof crews.



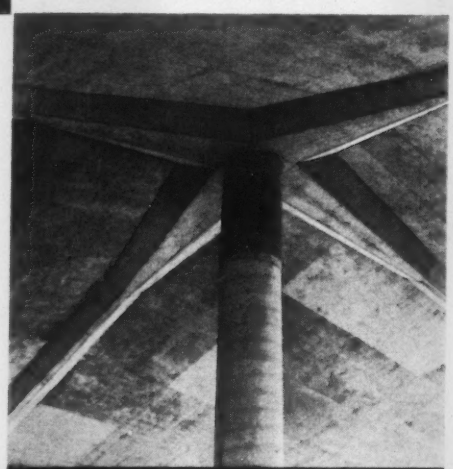
Each umbrella shell is supported by a single 24″ diameter concrete column. Underside of shells will be finished with ¼″ of accoustical plaster applied directly to the concrete. Lehigh Portland Cement was used throughout.

Provide Unobstructed Floor Areas, Distinctive Appearance

New concrete shell roof designs and up-to-the-minute construction techniques make for excellent results on jobs like this shopping center near Latham, N.Y. Here, umbrella-type concrete hyperbolic paraboloids provide large unobstructed floor areas at very low cost.

To help assure themselves of top quality concrete for this interesting job, Machnick Construction Company specified Lehigh Portland Cement. For *your* next job, whether it requires precast or cast-in-place concrete, remember that there is a Lehigh Cement to meet any construction need. Lehigh Portland Cement Company, Allentown, Pa.

Owner: Albany G. E. X. Corporation
Architect: Manuel Morris & Robert E. Sixta Assoc., Kansas City, Mo.
Structural Engineer: Dutton Biggs, Kansas City, Mo.
Contractor: Machnick Construction Co., Inc., Troy, N. Y.
Ready Mix Concrete: Latham Ready Mix, Inc., Cohoes, N. Y.



LEHIGH CEMENTS

Peaked Building Saves Storage Space

Down-to-earth trussed rafters frame a 256 x 260-ft, column-free grain warehouse in Alva, Okla. The unconventional structure consists of trussed rafters spanning between earth-berm sidewalls.

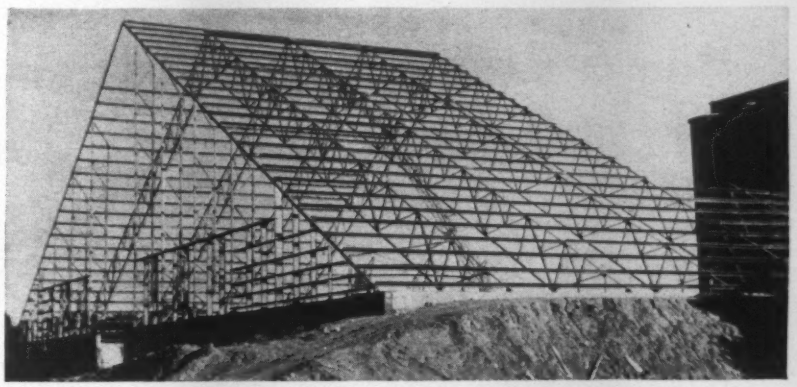
Earth banked 22 ft high absorbs thrust from the rafters and outward pressure from stored grain. Walls and floor are lined with 4-in. thick concrete.

Rafters pitched at 28¼ deg leave enough clearance for conveyors over the top of the grain pile. Galvanized, corrugated steel sheets overlaying fourteen 256-ft frames, enclose the 260-ft-long building. Each 8-ft-deep, modified-Warren-truss rafter is 145 ft long. The ridge beam is 91 ft above floor level.

Top and bottom chords are anchored to separate foundations. The sidewall lining thickens to 3 ft 6 in. under the bottom chord, and two 18-in. dia concrete piles take the thrust from the top chord. Roof load is transferred to the foundations through pin-connected joints at the end of both chords.

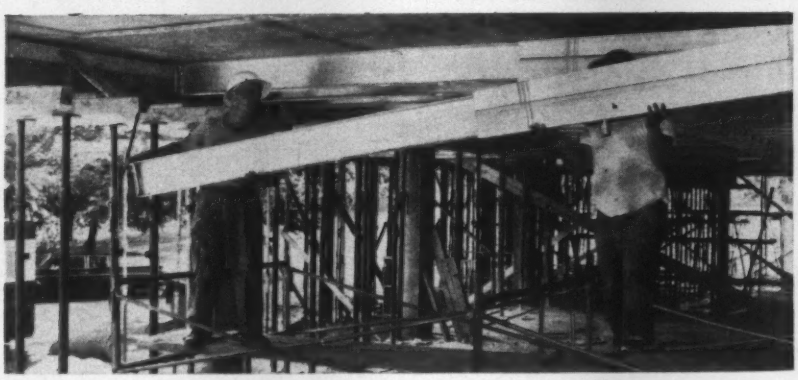
By adding 20-ft bays, the owner later can increase the storage capacity. Present capacity is estimated at 11,500 bbl per lin ft, for a total of 3 million bbl.

American Steel Building Co., Houston, Texas, designed and erected the warehouse for Bewley Mills, Inc.



Lightweight Beams Cut Flooring Costs

ALUMINUM FORM BEAMS are extended for easy placing from above . . .



. . . and retracted for stripping from below after concrete floor is laid.

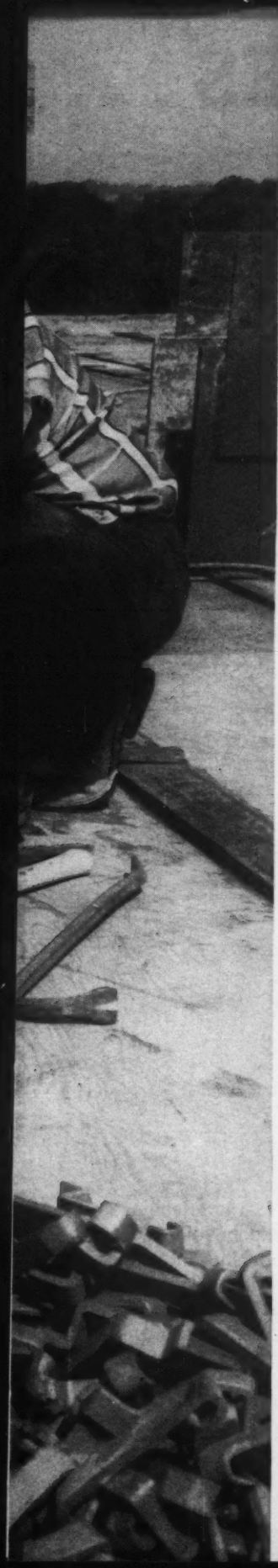
An expandable, aluminum beam helps the contractor make fast work of concreting a new dormitory for Boston's Emmanuel College.

The temporary beams span across the building's permanent beams and support concrete formwork. A steel bolt in a steel nut plate locks the telescoping beam into position and assures non-creeping adjustment to close tolerance. Plywood set atop the beams serve as the floor forms. The only shores needed are under the beam ends.

The Alcoa-Hico beam is really two beams in one, an I-beam inside a box beam, with built-in camber. With a safety factor of 2.5, the beams come in three span ranges. The smallest telescopes from 6 to 10 ft, weighs 45 lb. A 9- to 15-ft span weighs 67 lb. And a 15- 17-ft beam, comprised of two box beams telescoped over each end of an I-beam, weighs 74 lb. Only one man is needed to carry the beams on and off the job, and two carpenters and a laborer set and strip them.

The project supervisor, Emmett Logue of Charles Logue Building Co., Boston, reports that he reduced the costs of placing four stories of concrete floors by using the light-weight beams.

The expandable aluminum beam is now being used on at least eight other projects in the Boston area. The Aluminum Company of America produces the beam, and Hico Corporation of America, New York City, markets it.



ECONOMY IN APARTMENT HOUSE CONSTRUCTION

Substantial savings in both cost and time were effected by combining Jones & Laughlin lightweight sections with reinforced concrete and structural steel frames in the construction of the 9-story 11 Slade Apartments for Mullan Contracting Company of Baltimore. Mr. Thomas F. Mullan, Jr., reported that the design enabled his firm to complete one floor every four days instead of the six usually required for a job of this size.

In the construction of the apartment, 2-story steel columns were set in place immediately followed with column ties and wind bracing. Girders were reinforced concrete members, formed between columns through the use of Junior Channel forms supported on removable column seat angles.

The 12″ Junior Beams and 14″ Light Beams used as secondary floor members were spaced on top of Junior Channel girder forms at 24¾″ flange-to-flange, and extend 4″ into each concrete girder. After aligning columns and placing intermediate supports under the girder forms, cast iron clips (known as "K-Clip") were hooked over the top flanges of the J&L Junior Beams on approximately 30″ centers. Plywood forms supported on the protruding tails of the K-Clips form the concrete floor slab. With the K-Clip System, the concrete slab is in contact with the top and sides of the flanges of the floor beams, providing lateral bracing during construction and a rigid finished floor. Easy removal of the forms and re-use after cleaning provide real savings in form cost.

To complete the J&L Junior Channel girder forms, prior to placing of girder reinforcing and wire mesh in the floor slab, removable metal bulkheads were placed between the floor beams.

The ease of handling lightweight steel beams, the re-use of all forms and the time savings in forming and stripping the concrete slabs all combined to produce outstanding economy.

Another attractive Mullan apartment, 3900 North Charles in Baltimore, is now being constructed, utilizing the same cost-saving design features used in the 11 Slade Apartments.

Jones & Laughlin Steel Corporation

3 Gateway Center, Pittsburgh 30, Pennsylvania

STEEL

Architect—Joseph Foutz
Structural Engineer—Edward S. Klausner
Associate Engineer—Wallace & Gutberlet

TITAN MISSILE BASES...

another Euclid job

Midland Constructors, a joint venture of Hardaway Contracting Co., Columbus, Ga.; Oman Construction Co., Nashville, Tenn.; R. P. Farnsworth & Co., Inc., New Orleans, La.; and Wright Contracting Co., Columbus, Ga., is building 18 missile launching sites near Little Rock, Arkansas, for the U. S. Corps of Engineers. Contracts call for clearing the sites, building all-weather access roads, excavation and construction of the basic launching silos. Excavation for each silo is 117½ feet deep and 65 feet wide.

Euclid equipment was selected for this rush job on the basis of its performance and dependability on other projects completed by the firms in the joint venture. All-wheel drive TS-14 Scrapers are being used for site clearing and building access roads. Rear-Dumps of 10-ton capacity handle waste brought to the surface by a 3 yd. skip hoist.

If you need equipment that's built for heavy service... that gets tough jobs done faster and at lower cost... check the Euclid line.

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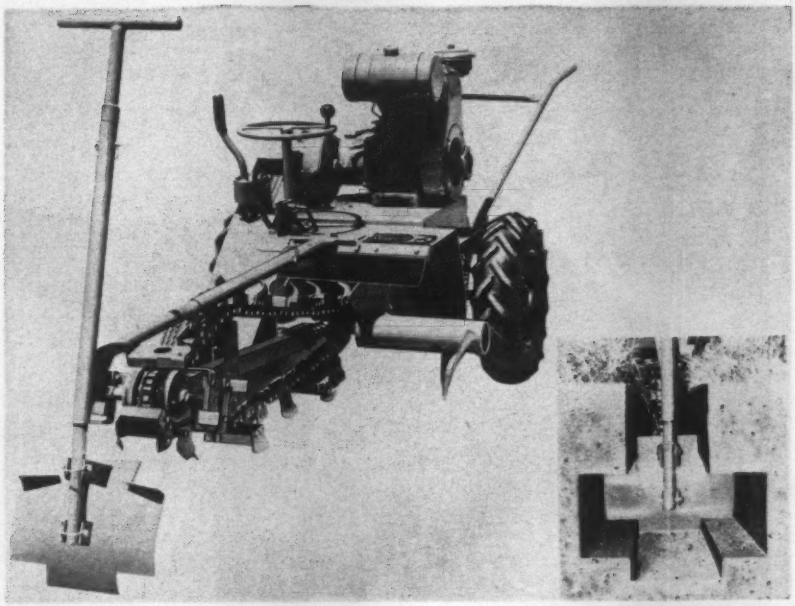
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



'T' Footing Cutter Cuts Forming

A "T" footing cutter can eliminate concrete forms for light building foundations, the manufacturer claims. It attaches to the Ditch Witch trenchers.

For light footings, a cutter with an 8-in. stem and 16-in. "T" attaches to the M3 or M4 Ditch Witch trencher. For heavier jobs, a 12-in. stem, 24-in. "T" cutter mounts on the four-wheel drive K2 Ditch Witch trencher. The Charles Machine Works, Inc., 1959 W. Fir Ave., Perry, Okla.

Partitions Act Like Fixed Wall

The Operable Wall is a folding acoustical barrier that offers sound reductions equal to many fixed walls. Movable partitions absorb 39 decibels over all ranges, and 42 decibels at speech level.

Each folding wall is made of individually hung panels secured to an overhead track and a recessed floor guide. One panel may be installed as a door.

Each panel is made of two sheets of enameled steel for reduced maintenance, and a core of mineral wool for sound attenuation. Continuous sealing of panel perimeters and gasketing at all joints prevents sound leaks.

A 30-ft span Operable Wall will stack in an area less than 2 ft deep. Tack and chalk board may be mounted on the panels. E. F. Hauserman Co., 5711 Grant Ave., Cleveland 5, Ohio.

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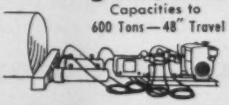

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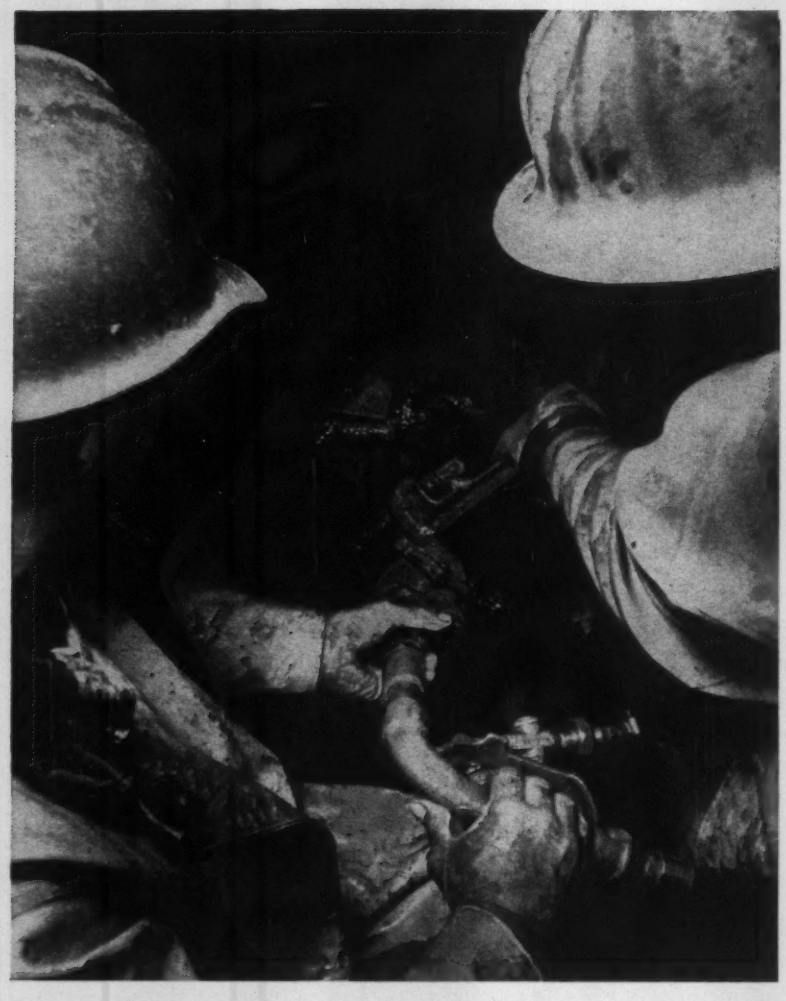

cement grout stay put in submerged, porous slag fill

How would **you** cope with this situation?

Slag and cinder fill with up to 70% voids . . . six-foot diameter tunnel for the Duquesne Light Co. on a 17.2% grade with its outfall in a coffer dam 23 feet below the Monongahela River level . . . pumps and a 12" drain ineffectual against almost free water flowing through . . . cement grout washed down the drain as fast as injected . . . only one ring of 16" liner plates placed in a week!

Assisted by a Cyanamid AM-9 Service Crew, the John F. Casey Co. of Pittsburgh, Pa. licked the problem this way:

Two-inch injection pipes were angled out 10-16' from the four quadrants of the heading bulkhead and one driven straight ahead into the cinder slag fill. With a novel hook-up of mixing drums and a mixing pump, a mixture of cement grout and AM-9 (3 second gel time) was pumped to refusal.

AM-9 gelled almost instantly — holding the cement in place where it set to its full strength before it could be washed away. Soon the water inflow was under control and the heading advanced 9 rings a week . . . the job was back on schedule.

Cyanamid AM-9 Chemical Grout gives contractors a faster, surer method of controlling water and stabilizing ground in tunnels, mine shafts, coffer dams, caissons, open excavations, sewer-pipe joints, oil wells, drill holes and basements. Injected as an aqueous, non-viscous solution with a catalyst, AM-9 solidifies into a stiff, permanent, impermeable gel. Setting time is closely controllable by varying catalyst dosage. No natural ground formation has been discovered in which grout cannot be made to set.

You should know all about AM-9 so you can use it to best advantage the next time you're faced with water seepage. Contact our nearest office for information.

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BOUND BROOK, NEW JERSEY

IF IT'S CYANAMID IT'S DEPENDABLE!

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Obituaries

Alden W. Welch Dies; Originator of ENR Indexes

Alden W. Welch, 73, research editor, AMERICAN CITY magazine and secretary, Buttenheim Publishing Co., New York, died recently.

For about 20 years prior to 1934 Mr. Welch was on the staff of ENGINEERING NEWS-RECORD, first as an assistant editor and later as manager of the Business News Department.

In 1921 he conceived the idea for the ENR Construction Cost and Volume indexes, which were then developed according to principles devised by F. E. Schmitt, then associate editor, later editor of ENR.

WASHO President Dies; Oregon's W. C. Williams

W. C. Williams, 65, president of the Western Association of State Highway Officials and Oregon's chief highway engineer has died.

Mr. Williams joined the highway department's transit section in 1920 after graduating from the University of Oregon and was named chief highway engineer in 1956.

Daniel H. Burnham, 75, president of the Chicago architectural firm, Burnham & Hammond. He was a long-time president of the Chicago Regional Planning Association and was secretary and director of works for Chicago's Century of Progress Exposition in 1933. Mr. Burnham was one of the three architects who judged designs for completion of the Tomb of the Unknown Soldier in Washington.

Cornelius J. Keily, 84, former vice president and general manager of the Jamaica (N. Y.) Water Supply Co. where he worked for 38 years. He was a member of the American Water Works Association.

W. Herbert Gibson, 84, retired partner of Gibson and Kline, Philadelphia engineers. He was a graduate of West Virginia University.

John A. Thorpe, Jr., 64, president of the Thorpe Construction Co. of Akron, Ohio.

Joseph B. McCrary, 92, president of his own engineering and construction firms in Atlanta, Ga. His companies planned or built more than two-thirds of the municipal water, light and sewer systems in the state of Georgia.

Walter F. Diemer, 72, recently retired engineer with the Louisville, Ky., firm of Joseph H. Kolbrook, architects and engineers.

Thomas O. Russell, 80, retired chief engineer of the Oregon Public Utilities Commission. Before joining the state, he worked for the Southern Pacific Railroad and directed projects in South America. He was also a founder of the Willamette Basin Project Commission.

John W. Dandridge, 52, Monroe, N. C., consulting engineer and a retired Army colonel. A graduate of The Citadel, he was associated with Piatt and Davis at Durham before going into private practice in Charlotte, N. C.

Jesse C. Gorby, 44, head of the Jesse Gorby Construction Co. of Akron, Ohio.

Louis Yeager, 71, retired engineer with the Philadelphia firm of Day and Zimmerman, Inc.

Otto J. Kling, 68, senior partner in the Youngstown, Ohio, architectural firm of Kling, Frost, Philpott & Smith.

Guy C. Hiner, 80, a Canton, Ohio, consulting engineer who formerly operated his own construction firm. He was serving his ninth term in the Ohio General Assembly.

R. Lee Beeler, 74, Nelson County, Ky., road engineer for 33 years and most recently county judge. He received a citation for his war-time supervision of sewer installations at Camp Taylor near Louisville.

Joseph J. Baldwin, Jr., 59, bridge survey engineer for the North Carolina Highway Department.

Ernest McGeorge, 84, architectural engineer and former partner in the firm of McGeorge-Hargett & Associates of Cleveland, Ohio.

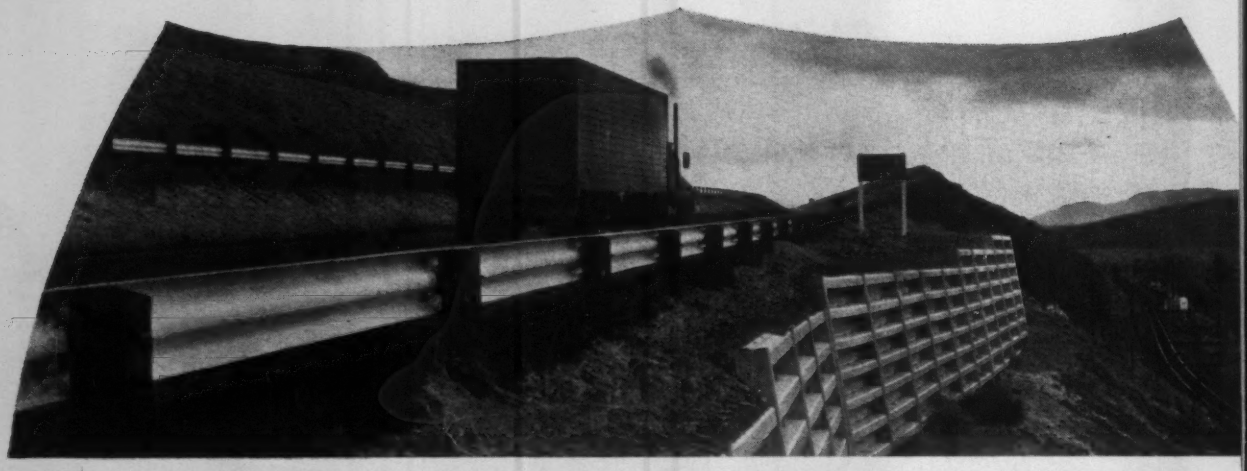
Paul M. Snell, 68, former chief dredging consultant for the South Atlantic District, Army Corps of Engineers. He started his 42 years' service with the Corps as a surveyor and traveled to South America and the Middle East as a special consultant. He received a citation for his work during World War II. After retiring from the Corps in 1958, he became a private consultant in Wilmington, N. C., and served as consultant on dredging operations on the Suez Canal for the World Bank.

Engineers . . . who demand rugged dependability to meet pumping needs . . . specify Weinman Pumps. That's because Weinman Pumps are simply designed and precision built of top quality materials for years of maintenance-free service.

A case in point . . . the Weinman Type L Split Case, Single Stage, Double Suction Pump. Designed for large capacity, high, medium or low head pumping applications, the Type L's wide range of industrial uses makes it ideal for moving liquids at rates up to 4000 g.p.m. against heads up to 400 feet. And, the horizontally split case makes inspection and maintenance of rotating parts fast and easy without removing piping.

The Type L is just one of many job-proven, job-fitted Weinman Pumps that makes your Weinman Pump Specialist a good man to know. To meet your pumping needs he'll give you the advice of experience. So, look him up in the Yellow Pages... or, write for Bulletin 1200.

THE WEINMAN PUMP MFG. CO.
290 SPRUCE STREET COLUMBUS 15, OHIO
CENTRIFUGAL SPECIALISTS



Above:
INTERSTATE 80—Truck climbs grade east of Sparks, Nevada. Armco Retaining Wall holds fill on slope above a railroad right of way.

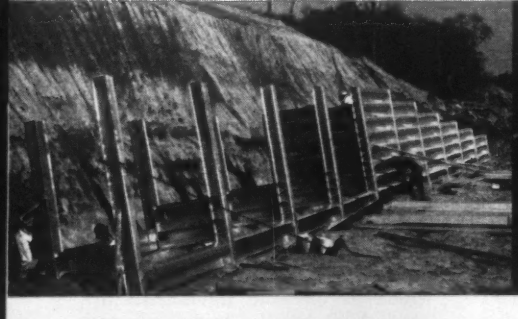
Below:
INTERSTATE 90—
In western Montana this 350-foot long Armco Retaining Wall was installed to keep the new highway fill from encroaching on irrigation channel and protect steep slope from erosion.

Why Armco Retaining Walls get the TOUGH JOBS on the interstate system

Throughout the big Interstate Highway system you'll find tough earth control problems being solved with unique Armco Bin-Type Retaining Walls. Armco Walls are made of a series of inter-connected bins, assembled at the job site from easy-to-handle steel parts. Height and length can be varied to fit the requirements of each job.

These Armco Walls have many advantages for the designer **and** the builder. Eliminated are problems such as damage from differential settlement and freezing "break-up." Armco Walls adjust to settlement without loss of structural integrity. And frost action is no threat to the all-steel, bolted construction. Actual erection moves smoothly. No form work is required; no curing period.

Most important: Armco Retaining Walls have been proved in service for more than twenty-five years. For complete data, send the coupon for the latest edition of the Armco Retaining Wall catalog. **Armco Drainage & Metal Products, Inc., subsidiary of Armco Steel Corporation, 8021 Curtis Street, Middletown, Ohio.**



Left:
INTERSTATE 70—
Use of Armco Retaining Wall near an old Missouri landmark permitted new Interstate road to pass close to the property. Short slope could be designed in front of landmark without danger of encroachment on the road.

ARMCO DRAINAGE & METAL PRODUCTS, INC.
8021 Curtis Street, Middletown, Ohio

Send my free copy of the Armco Retaining Wall catalog

NAME ..... TITLE .....

ORGANIZATION ..... TELEPHONE .....

STREET .....

CITY ..... ZONE ..... STATE .....

ARMCO Drainage & Metal Products

Farm-to-market road in Lamar County, Texas, was built in fall of 1957 with an original strength of 415 psi. Spring, 1960, core shown above tested 831 psi. Cement used was 8% by volume.

Pavement strength increases 100% in 2½ years on this road in Lamar County, Texas

...soil-cement pavement grows stronger year by year!

Core tests give dramatic proof that soil-cement grows stronger with age. In fact, it's the strongest low-cost paving material there is.

Examples from all over America give evidence of the low-cost service provided by soil-cement pavements. To begin with, 75% of the materials are usually free. Soil, old gravel roads, or broken-up blacktop, can be the main ingredients. Mix with portland cement and water, roll solid, let harden—then top with a thin bituminous surface.

Paving goes fast. Experienced crews using modern machines can lay up to one mile a day. And this is one low-cost pavement that keeps maintenance costs at the barest minimum. It has the beam strength that distributes traffic loads over the subgrade—stays level, free from ruts and washboarding.

It's easy to see why soil-cement is being specified more and more wherever low-cost pavements are needed for roads, streets, airports and parking lots. Write for free complete information. (U.S. and Canada only.)

PORTLAND CEMENT ASSOCIATION
Dept. A12b-17, 33 W. Grand Ave., Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete

MODERN soil-cement

Indiana Town Alters Waterworks

This $147,511 waterworks program in Hebron, Ind. was let in five contracts: elevated steel tank, $29,315; distribution system, $51,519; treatment plant, $49,167; wells, $9,484; electrical work, $8.026. The program involves an extension and reconditioning of the existing water system. Certain alternates to be selected by the town will add $9,000 to this project. Chas. W. Cole & Son of South Bend is the consultant.

E. R. Knapp & Sons, Inc., of Rochester, Ind., took two of these contracts, the tank on a bid 4% under the next closest and 13% under the high of five and the treatment plant on a low less than 0.6% under the second bid but 13% under the high of six.

Boyd Construction Co. of Hobart got the distribution system job in the most competitive bidding of the day. Their low was 9% under the next bid but 39% under the high of eight.

Rehabilitating existing wells, driving a new one and supplying a deep well centrifugal pump drew only two bids with W. F. Brunt of Cedar Lake coming in 4% under Layne-Northern of Mishawaka.

Van Ness Electric Co. of Valparaiso got the electrical servicing award on a price 6% under the second bid and 56% under the high of three.

Pricing of concrete tower and riser pier foundations, 45 cu yd, was a deciding factor in the tank contract bids. Prices ranged widely from $47.00 to $65.00 a yard. Tank prices ranged from $27,000 to $30,440.

Four-inch cast iron water main, 10,740 lf, was the major cost item in the main job. The four-inch main was priced from $2.19 to $3.87 a foot. The second major cost item, 2,090 lf of six-inch cast iron row water main, ran from $2.91 to $4.25 a ft. Six-inch cast iron pipe in metal pipe sleeve, 160 lf, is ASA A21.1 for class 150 with 21.45 characteristics. Price ranged from $17.00 to $45.00 a foot.

The treatment plant work involves installation of an iron removal and softening plant. Pressure filters with multiple valve assembly were chosen over the alternate of single control valve filters. Knapp priced the three pressure filters with multiple valve assembly only $278 under the single valve assembly.

Basic wage rates include: skilled, $4.50; semi-skilled, $3.50; common, $2.82.

The bidding included:

1C E. R. Knapp & Sons, Inc., Rochester, Ind. $29,315
2 W. E. Caldwell Co. Inc., Louisville, 8 Ky. 30,525
5 Grayer Tank & Mfg. Co., Chicago, Ill. 33,690

Elevated Tank

Bids: 10-3-61 Items	Unit	Quantity	Unit Prices 1C	2
Fdn bearing test	ls	job	100	400
Conc, tower & riser pier fdn.	cy	45	47.00	65.00
Steel tank, elevated, 100,000 gal	ls	job	27,000	27,000
Grade & seed tank site	ls	job	100	200

Mains

1C Boyd Const. Co., Hobart, Ind. $51,519
2 Marion Hamilton & Sons, South Bend, Ind. 56,056
8 Woodruff & Sons, Inc., Michigan City, Ind. 84,771

Bids: 10-3-61 Items	Unit	Quantity	Unit Prices 1C	2
Water main, CI, 10"	lf	280	4.86	6.00
8"	lf	210	4.00	4.10
6"	lf	480	3.57	3.45
row 6"	lf	2,090	2.91	3.25
4"	lf	10,740	2.19	2.40
CI P, in met pipe sleeve 6"	lf	160	17.50	20.00
Pipe, copper water service ¾"	lf	3,600	1.22	1.50
Hydrants, fire 4"	ea	15	170.21	165.00
Gate vlv & box 10"	ea	1	149.00	195.00
6"	ea	2	75.00	96.61
4"	ea	1	65.00	79.82
Tapping sleeve & gate vlv & vlv box 8"	ea	1	243.65	236.00
6"	ea	1	182.20	184.00
4"	ea	26	150.00	145.00
Cocks, corp ¾"	ea	120	8.40	7.80
Meter yoke, f.	ea	40	6.41	5.75
i.	ea	40	4.95	2.50
Water meters, f.	ea	40	28.50	29.50
i.	ea	40	3.00	2.50
Meter box & cover	ea	30	22.50	28.00
Curb stop & box	ea	10	17.00	17.20

Treatment

1C E. R. Knapp & Sons, Inc., Rochester, Ind. $49,167
2 Marion Hamilton & Sons Inc., South Bend, Ind. 49,440
6 Calumet Const. Co., Hammond, Ind. 75,188

Bids 10-3-61 Items	Unit	Quantity	Unit Prices 1C	2
Aerator & detention tank	ls	job	6,900	9,385

Filters

base bid: pressure w/ mult vlv assembly	ea	3	3,074	3,184
alternate: sing control vlv on ea filter	ea	3	3,167	3,714
Softeners	ea	2	6,748	6,100
Pumps, high service	ea	2	875.00	1,243
Tanks, salt storage	ls	job	3,900	6,469
Piping, incl abv & below grnd	ls	job	3,600	2,058
Chlorinator	ea	1	1,450	1,755
Laboratory table	ea	1	250	360
Plug valve, new at Park Pump Hse	ls	job	200	165
Water Bldg, exist recondition	ls	job	8,400	5,120

Wells

1C W. F. Brunt, Cedar Lake, Ind. $9,484
2 Layne-Northern Co., Mishawaka, Ind. 9,888

Bids: 10-3-61 Items	Unit	Quantity	Unit Prices 1C	2
Well, rehabilitate exist water bldg	ls	job	700	1,250
park pump hse	ls	job	700	990
Pump, centrifugal, deep well, in Water Bldg	ls	job	1,800	1,663
Well, new const.	ls	job	6,284	5,985

Electrical Work

1C Van Ness Electric Co., Valparaiso, Ind. $8,026
2 Sweney Electric Co. Inc., Gary, Ind. 8,535
3 W. F. Brunt, Cedar Lake, Ind. 18,140

Bids 10-3-61 Items	Unit	Quantity	Unit Prices 1C	2
Electric serv at elevated tank	ls	job	329	425
in exist water bldg	ls	job	5,992	6,260
at new well	ls	job	1,695	1,850

ENR Constr. Cost Index (1913=100) 20-cities avg.—854.48

Proved Cost Saver

CURE and SEAL CONCRETE WITH 1 PRODUCT

THOMPSON'S WATER SEAL

Eliminates wet sacks, papers, hosing and spraying

Spray deep penetrating, colorless Thompson's Water Seal on fresh concrete to cure and seal in one operation. Save time . . . save labor.

Effectively controls moisture loss for 28 days and beyond.

Assures uniform curing even in hot, dry weather.

Helps reduce checking, cracking, spalling.

Produces harder, dust-free surface.

Eliminates waterproofing concrete floors.

Permits adequate time for smooth troweling.

Send for technical bulletin and Contractors Case History file.

A proved bond breaker for pre-cast, tilt up and lift slab construction. Permits easy, clean separation of slabs, walls, pre-cast members.

Available in 5 and 55 gallon drums from building supply stores, paint and hardware dealers.

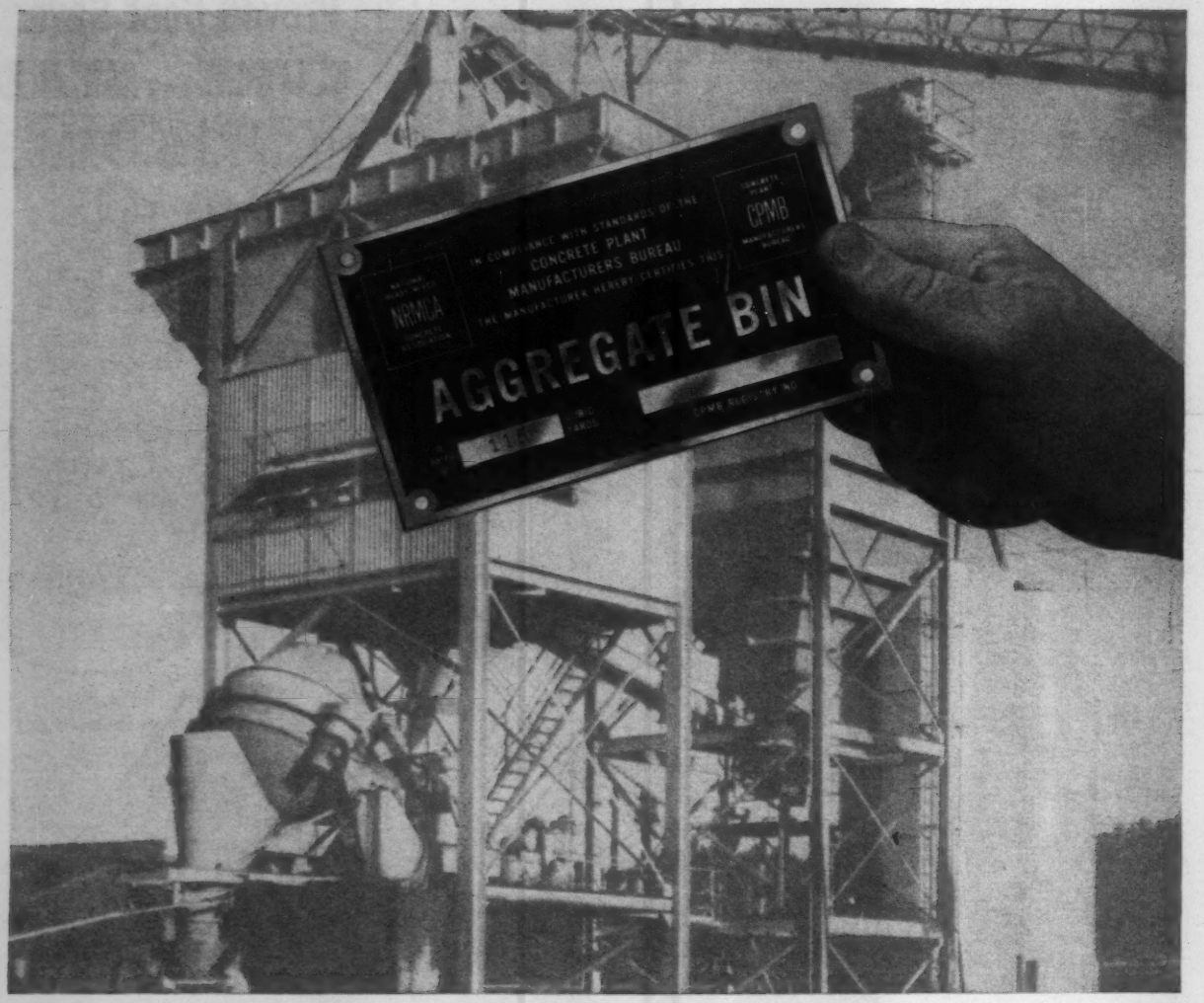
4932

Thompson's

MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929

E. A. Thompson Co., Inc., Merchandise Mart, San Francisco 3, California

San Francisco • Los Angeles • San Diego • Portland • Chicago • Seattle • Denver • Dallas Houston • St. Louis • St. Paul • Detroit • Philadelphia • New York City • Memphis • Cleveland • Factory: King City, California



Concrete plant standards are safety standards, too

One of the questions every purchaser of a concrete plant bin or silo should ask is this: *How can I be certain that it is structurally safe?*

This question is important because storage structures can and do fail, with costly human and monetary loss, when they are inadequately designed for the service and conditions in which they are placed.

Your Assurance of Safety

The Rating Plate of the Concrete Plant Manufacturers Bureau (CPMB) gives you this important assurance: It guarantees compliance with quality standards which require that bins and silos shall be designed structurally in accordance with the current specifications of the American Institute of Steel Construction:

Furthermore, you are assured that the design of your storage equipment has been the responsibility of a full-time registered engineer, *who is familiar with your particular local conditions, your building code requirements and such special factors as the incidence of hurricanes or earthquakes in your area.*

The Rating Plate that certifies these safety standards for bins and silos also identifies and guarantees their capacities by official standards of measurement. Rating Plates, in the same way, now certify the classification and capacity of every standard batcher, aggregate and cement elevator and conveyor to which they are affixed.

Based on 236 Years Experience

The standards thus guaranteed by Rating Plate have been developed by the cooperative effort of the leading manufacturers who have built most of the concrete plants in use today — combining 236 years of practical experience in the engineering and construction of plant components. These standards have been approved by the Board of Directors of the National Ready Mixed Concrete Association and are available, in printed form, to concrete producers, contractors and engineers. Address your request to the Concrete Manufacturers Bureau, 1411 K Street, N. W., Washington 5, D. C.

CONCRETE PLANT MANUFACTURERS BUREAU (CPMB)

An Affiliate of the National Ready Mixed Concrete Association

BLAW-KNOX COMPANY
Pittsburgh, Pa.

BUTLER BIN COMPANY
Waukesha, Wis.

CHAIN BELT COMPANY
Milwaukee, Wis.

ERIE STRAYER COMPANY
Erie, Pa.

THE HELTZEL STEEL FORM AND IRON COMPANY
Warren, Ohio

THE C. S. JOHNSON COMPANY
Champaign, Ill.

NOBLE COMPANY
Oakland, Calif.

Materials Prices

Monthly Market Quotations By ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Nov. 23; Next, Dec. 21
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Nov. 23; Next, Dec. 21
- Wage Rates, Building Board, Lath, Insulation: Last, Nov. 30; Next, Dec. 21
- Cement Aggregate, Ready Mixed Concrete Asphalt: Last, Dec. 7; Next, Jan. 4

Iron and Steel Products–F. O. B. Warehouse, Per 100 lbs., Base Price

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
Struct. shapes	Cwt	$7.52–8.15sV	$9.70	$9.00ty	$8.00–9.30KssV	$7.07–8.34ysV	$7.64–8.91styV	$7.46–8.73tysV	$7.51–9.18MsV	$8.24cK	$7.64–8.91MsV	$9.90sT	$8.70–10.45ktsV	$7.78–8.17ysV	$7.85	$7.35–9.13Vss	$7.35–8.40ssV	$7.07–8.34syV	$7.30–8.57stxyV	$9.40–11.25ssV	$8.60–10.80aDsV	$7.90–8.60CF/$8.20–8.90AiF	$8.90H
Reinf. bars, new steel	"	7.57	9.00T	6.81syV	8.75t	6.30–6.45guV	8.21t/	6.70ct	8.50	9.35	7.37	8.21N	7.35frt	9.26T	$8.00gktx	8.60ty	8.23uy	7.35y	7.35f/txQ	8.25jS	9.00DM	7.00/7.50FGi	7.80
Reinf. bars, rail steel	"	.....	.....	6.81syV	8.75t	6.30–6.45guV	.....	.....	8.50	.....	11.85	.....	.....	9.26T	.....	8.60y	9.30y	.....	7.35f/txyQ	.....	.....	7.00/7.50FGi	7.80
Expanded metal lath & std. diamond mesh, 3.4 lb	"	44.50	44.50	61.00pK	47.00K	52.00f/U	44.50Kg	43.50KL	44.50u	53.00n	67.00 O	51.00	55.00S	43.50K	64.50K	50.00n	46.50f/U	58.50f/rw	64.00wxK	53.00S	67.00f/nD	65.700h	49.50qI
std. ribbed, 3.4 lb	"	49.00S	49.00	67.00pK	51.00K	63.00f/U	48.50mnKg	47.50KL	49.00w	58.00n	74.00 O	55.00	64.00S	47.50K	61.00K	58.00no	51.00f/U	64.50f/rw	65.00wxK	58.00S	73.50f/nD	70.20h	44.85qI

Reinforcing Bar Extras, per cwt, N. Y.—• Quantity (applies to LCL shipments only): under 1,000#, +$1.80; 1000–1999# +$1.50; 2000–4999#, +$1.20; 5000–9999#, +90¢; 10,000–19,999#, +60¢; 20,000–29,999#, +30¢; 30,000–39,999#, +10¢; 40,000# & up, none. • Size†: #2 +$2.50; #3 +$1.40; #4 +$1.00; #5 +70¢; #7, #8, #9, #10, #11 +50¢ • Bending: heavy, +90¢; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). • Engineering (details and placing from designs by others); over 500 tons, +45¢; 200–499 tons, +50¢ but not over $4500; 75–199 tons, +65¢ but not over $2000; 20–74 tons, +75¢ but not over $975; 5–19 tons, +85¢ but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +60¢.

Structural Shape Extras, per cwt, Chicago, Cincinnati, Cleveland, Dallas, Detroit, New York, Philadelphia, St. Louis and Pittsburgh. Item; 10,000# and over, base, 5,000–9,999#, +10¢, 2,000–4,999#, +35¢, 1,000–1,999#, +85¢, 400–999#, +$1.75, 100–399#, +$1.75, under 100#, +$1.75. Order: 20,000# and over, base, 10,000–19,999, +25¢, 5,000–9,999, +65¢ 2,000–4,999, +$1.50, 1,000–1,999, +$2.50, 400–999, +$4.00, under 400, +$8.00. Item extras do not apply in Chicago, Cleveland, Cincinnati, Detroit and St. Louis. */# Delivered. •** Aver. of Canadian & American. •## add 4% sales tax. •a 2000–4999#. •b 10,000–19,999#, fob city. •c 20 tons or over. •d 10,000–29,999#. •e Intermediate struct'l. •f incl. delivery in free zone. •g CL. •h list price; dominion tax exempt; add provincial and municipal taxes. •i add provincial and municipal sales taxes. •j intermediate and hard grade. •k fob city. •l delivered; contractor to do unloading. •m copper alloy. •n LCL. •o asphalt coated. •p 500 sq yd. or more. •q 2.5 lb. •r less 2% disc. for cash. •s 10,000# item in 20,000# order. •t less ½% disc. 10 days. •u add 10¢ switch. •v incl 15¢ del. •w truck lots. •x add 2% sales tax. •y add 15¢ del. •z add 10¢ del. •A American made. •C Canadian made. •D ½% for cash. •E 30,000# or over. •F Federal tax exempt for bldgs. •G add 10¢ del. •H $8.85 without tariff charges. •I 3 lb $60.00. •J 4 lb $47.50. •K less 2% disc. 10 days. •L F.o.b. Youngstown plant. •M 5,900–9,999#. •N 2,000–19,999#. •O 100 sy lots. •Q 5 tons to CL. •R revised. •S less 2% disc. 10th •T less ½% disc 10th of mo. •U less 2% disc. 10 days. •V varies according to type and size. •W add 3% sales tax

Iron and Steel Products–Base Mill Prices Carlot Quantities

Item	Unit	Birmingham area	Chicago area	Pittsburgh	Buffalo area	Cleveland	Youngstown area	Geneva	Los Angeles	Pueblo
Struct. Shapes	cwt	$5.50	$5.50	$5.50	$5.50	.....	.....	$5.50	$6.20	.....
Plate Carbon Steel	"	5.30	5.30	5.30	5.30	.....	.....	5.30	.....	.....
Reinf. Bars (billet)•	"	5.675	5.675	5.675	5.675	$5.675	$5.675	.....	6.375	.....
Rivets, ½" struct	"	12.25	12.25	12.25	12.25	12.25	.....	.....	.....	.....
Sheet Piling (base)	"	.....	6.50	6.50	6.50	6.50	.....	.....	6.50	.....
Steel Rails, standard	Ton	110.50	110.50	110.50	110.50	.....	.....	.....	.....	.....
light	"	130.00	130.00	130.00	130.00	.....	.....	.....	.....	.....
Track Supplies										
Angle bars	cwt	6.975	6.975	6.975	6.975	.....	.....	.....	.....	$6.975
Std. spikes	"	9.75	9.75	9.75	9.75	.....	9.75	.....	9.75	9.75
Tie plates	"	6.60	6.60	6.60	6.60	.....	.....	.....	6.875	6.60
Track bolts	"	.....	.....	14.75	14.75	14.75	.....	.....	.....	.....

*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

Mill	2½ & 3 in.,* Black %	2½ & 3 in.,* Galv. %	3½ to 6 in.,* Black %	3½ to 6 in.,* Galv. %
Lorain, Ohio	13.75	+3.50	+1.75f	+19.50f
Aliquippa, Pa.	13.75	+3.50	3.25a	+14.50a
Sparrows Pt., Md.	17.25	+List	.....	.....
Benwood, W. Va.	13.75	+3.50	.....	.....
Youngstown, O.	13.75	+3.50	3.25	+14.50a
Indiana Harbor, Ind.	12.75	+4.50	2.25ab	+15.50a
Sharon, Pa.	13.75	+2.50	3.25ab	+13.50ab
Wheatland, Pa.	13.75	+3.50	3.25a	+14.50a
Etna, Pa.	13.75	+3.50	.50de	.....
Fontana, Calif.	0.75	+16.50b	+9.75ab	+27.50ab

WROUGHT STEEL PIPE, butt or continuous weld: Deduct (+) or add (−) these "discounts" from or to the following carlot list prices to get mill prices. Price per ft. (based on approx. $200 per net ton): 2½ in., 58½¢; 3 in., 78½¢; 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight for destination price.

WROUGHT IRON PIPE, lap weld: List prices per ft. same as for wrought steel pipe, but add these "discounts" to get Pittsburgh mill price. 2½ to 3 in., black 106%; galv. 139%; 4 to 6 in., black 103%; galv. 133%. Add freight for destination price.

• Threaded and coupled: a 3½ to 4 in. b to 1, 5 and 6 in. c 6 in. d-Seamless 5 in.

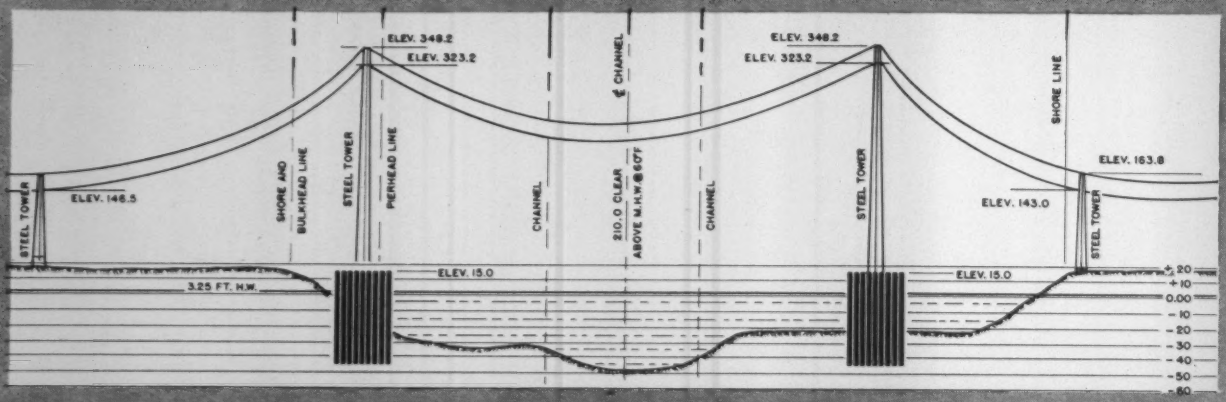
• Fairless Works, $5.825 Revised. These prices are nominal. Major reinforcing bar producers now quote prices on the basis of individual inquiries.

WELDED FABRIC REINFORCING, FOB Joliet, Ill., Donora, Pa., Monessen, Pa. mill, per 100 sq. ft.: 4 x 18 in., No. 5 & 10 wires....$7.04; 4 x 12 in., No. 8 & 12 wires....$2.62; 6 x 8 in., No. 6 & 6 wires....$4.17

Plumbing, Heating, Water, Sewer Pipe and Tubing

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
C. I. Pipe Price Index	a	130.6	140.2	125.8	143.2	140.0	135.6	141.8	137.9	145.1	142.1	138.6	148.6	145.0	132.4	138.6	137.9	142.9	135.7	148.6	149.0	.....	.....
Asbest. Cem. Pipe, 6"	lin. ft.	1.51	1.51	1.51	1.51	1.51	1.63	1.63	1.59	1.59	1.51	1.51	1.59	1.51	1.51	1.51	1.51	1.51	1.48	1.59	1.59	.....	.....
Asbest. Cem. Pipe, 12"	" "	2.36	2.19	2.26	2.19	2.19	2.19	2.19	2.26	2.36	2.19	2.26	2.19	2.26	2.26	2.19	2.19	2.19	2.26	2.19	2.19	.....	.....
Clay Sewer Pipe																							
8 in. ASTMC 13-55	ft./	0.571rn	0.665	0.50r	0.84qrtL	0.93rm	0.595	0.66BCN	0.575f/B	0.56nr	0.97nk	0.641r	0.86b1	1.05oB	0.602r	0.94	0.75	0.94K	0.63r	0.86f/d	0.91bk	1.13u	0.76F
12 in. " "	"	1.09rn	1.20	0.95r	1.55qrtL	1.78rm	1.15	1.27tBC	1.09f/B	1.00nr	1.86nk	1.148r	1.86blS	1.90oB	1.145r	1.76	1.44f/	2.01K	1.26r	1.86f/d	1.94kb	2.00u	1.43F
24 in. ASTMC 200-55T	"	4.67rn	3.07	4.14rw	6.39qrtM	7.52rm	4.95	8.47tBC	4.75f/B	4.98r	7.48nk	6.354br	7.55blS	8.00oB	5.96r	12.89	9.49f/v	8.79K	5.20r	7.53f/d	7.78k	7.00u	5.70F
36 in. " "	"	.....	12.71	13.50rw	.....	21.16rm	14.35	23.45tBC	10.53f/bB	.....	19.95nk	.....	16.39blS	.....	.....	35.61	25 73f/v	24.15K	13.25rS	18.00f/d	.....	13.50u	.....
Clay Drain Tile 6 in. V	M ft.	200.00sr	187.80	295.00rx	244.00r	220.00Br	177.50	179.40mBC	.....	460.00nr	212.00mk	327.00r	410.00blS	.....	.....	261.50pr	240.81	225.00f/	190.00	170.00r	360.00f/l	260.00ck	288.00	175.00F
8 in. V	M ft.	.....	289.20	430.00rx	348.60r	330.00Br	274.60	276.60mBC	.....	640.00nr	327.00mk	625.00r	590.00blS	.....	600.00	369.84	345.00f/	295.00	300.00r	620.00f/l	135.00	545.00	290.00F
Concrete Sewer Pipe, 12"	ft./	1.00mKr	1.01	1.75rS	1.56S	1.30	0.85rA	1.35	1.27BD	1.05m	1.40k	1.68r	1.30vE	2.19DFH	0.95lR	1.50f/B	1.35f/h	1.66DB	1.75i	105.00f/Q	1.90ky	1.17D	1.27F
24 in.	ft./	3.94mKr	2.75	2.75rS	3.60S	4.00	3.25rA	2.40P	2.95BD	3.50m	5.23k	4.20r	3.85fvE	6.31DFH	3.20il	3.60f/B	4.20f/h	3.93DB	4.05	3.30f/Q	4.50ky	3.11jpD	5.19F
Copper Water Tubing																							
3/8", Type L	ft.	0.1610	.....	0.1650	0.1420	0.1610	0.1610	0.1610	0.1610	0.1610	0.1740	0.1610	0.1610	0.1740	0.1690	0.1491	0.1610	0.1370	0.1610	0.1610	0.1540	0.1491U	0.2574UV
1/2", Type L	"	0.1840	.....	0.1840	0.1630	0.1840	0.1840	0.1840	0.1840	0.1840	0.1980	0.1840	0.1840	0.1820	0.1930	0.1712	0.1840	0.1550	0.1840	0.1840	0.1750	0.1771U	0.2617UV

•† Extra quality. •/ delivered. •## + 4% sales tax. •a PRICE INDEXES or CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S. PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. For explanation of index see ENR Sept. 29, 1955 page 139. •b Extra strength. •c 4-in., $130. •d SS361-A. •f 21 in. •g culvert pipe; reinf., ASTM C 75–56. •h reinf., ASTM C 75–54. •i reinf., ASTM C 76–55. •j centrispun. •k less 2% disc. for cash. •l fob plant. •m truck del. •n LCL del., fob truck. •p less 5% disc. 10th. •p freight allowed to destination in city. •u 35,000# minimum. •r less 2% disc. 10 days. •s 1 ft lengths. •u CSA A 60. •v standard strength. •w SS; add 20% for d.s. •x fob city. •y Reinforced. •z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. •A single strength. •B truckload. •C less 2% disc. 15th. •D ASTM 76–57. •E less 1% disc. 10 days. •F less 2% disc. 30 days. •G LCL. •H CL. •I fob origin, freight allowed. •J reinf. B14–15. •K Less 2% disc. 15 days. •L ASTM 13–57. •M ASTM 200–57. •N 2 ft lengths. Trucklots. •O add 2% Sales Tax. •P 18 in. •Q less 1% disc. 10th. •R revised. •S ASTMC 72, 12" 1.55, 24" 4.00. •T Second price transite pipe. •U Type K. •V including 11% sales tax, less 20% in lots under 6,000 ft. •W add 3% sales tax



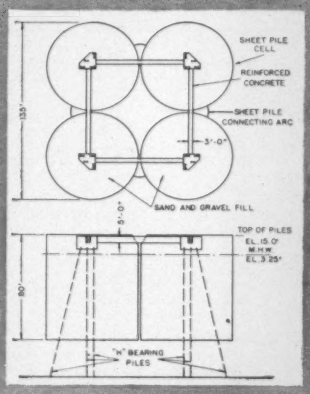
Ships Ahoy . . . steel islands ahead

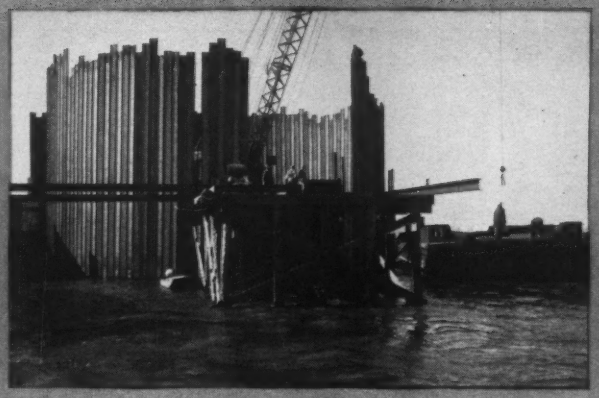
The Delaware River is 4,200 feet wide at the spot where Philadelphia Electric Company wanted to build its new 220,000-volt transmission-line crossing near Chester, Pennsylvania. Clearances for air and river traffic limited sag, restricting the span to 2,800 feet, which meant off-shore suspension towers and danger from heavy river traffic.

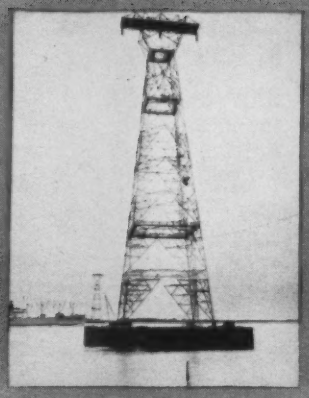
Philadelphia Electric engineers came up with this novel solution: build their own islands with steel sheet piling cells, filled with sand and gravel. These piling islands would offer good basic protection to the towers and also provide a working platform for construction and maintenance.

Each island consists of four 67′-diameter cells interconnected by short arc walls. Tower legs are individually supported on clusters of four steel

for maximum strength and durability







H-Piles driven to 90-ton bearing on rock. A total of 1,850 tons of USS steel sheet piling in sections MP-101 and MP-102 were required.

This foundation was designed on the basis that a cell could be destroyed without endangering the tower, although the islands are well out of the ship channel as shown by the plan at the upper left.

In support structures like this, steel sheet piling and H-Piles do the very best job, and at the lowest cost. Wherever you are building, you can get any type of piling when you want it from United States Steel. Just call our nearest office. For technical information write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

United States Steel Corporation • Columbia-Geneva Steel Division
National Tube Division • Tennessee Coal and Iron Division • United States Steel Export Company

USS **United States Steel**

TRADEMARK

Bids Asked—Low Bidders—Contracts Awarded

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Cambridge**—BA 12/20—Massachusetts Institute of Technology, 77 Mass. Ave., Proj. HHFA-Proj. CH-Mass. 61-D, MARRIED STUDENTS HOUSING on Campus. $2,250,000. Hugh A. Stubbins & Assoc., 806 Mass. Ave., archts. William J. LeMessurier & Assoc., 711 Boylston St., Boston, engrs. CD 7/7/61.

BUILDINGS—SLC

▲ **Mass., Boston**—Boston University, 755 Commonwealth Ave., soon lets contract LAW and EDUCATION BLDG. and HEATING PLANT. Approx. $2,000,000. Edwin T. Steffian, 711 Boylston St., archt. Paul Weidlinger, 770 Lexington Ave., New York, N. Y., struct. engr. CD 11/14/61.

▲ **Mass., Springfield**—State Carlton Inn, 209-211 State St., soon lets contract Carlton Tower APARTMENT. $2,500,000. Max Gitberg, 293 Bridge St., archt. Fred S. Dubin Assoc., 635 Framington Ave., Hartford, Conn., engrs. CD 11/30/61.

BUILDINGS—LB & CA

▲ **Wexler Constr. Co., Inc.,** 118 Needham St., Newton Highland, Mass., LB **$4,154,400,** SECONDARY SCHOOL (Saxonville) Winch Park "A", FRAMINGHAM, MASS. Town, Supt. Schools, 49 Lexington St., Framingham, Mass. BA 12/6. CD 11/27/61.

▲ **Franklin Constr. Co.,** 1621 State St., New Haven, Conn., LB **$2,657,000,** 11 three story Riverside APARTMENTS, ANSONIA, CONN. Housing Auth., 15 Maple St., Ansonia, Conn. BA 11/28/61. CD 11/9/61.

▲ **Horn Constr., Inc.,** 254 Prospect Ave., Hartford, Conn., CA Est. **$1,500,000,** WAREHOUSE and OFFICES, Kennedy Rd., WINDSOR, CONN. United Coast Realty Co., Rte. 72, Closson Bldg., Berlin, Conn. Philip J. DiCorcia, 376 Middle Tpk. West, Manchester, Conn., archt. Topps Dpt. Store, Hartford, Conn., lessee.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Pa., Swiftwater**—BA 12/19—National Drug Co. (Div. of Richardson-Merrell, Inc., 122 E. 42nd St., New York, N. Y.), 4663-85 Stenton Ave., Phila., Zone 44, LABORATORY and OFFICE, SEWAGE TREATMENT PLANT. $2,000,000. Extended date. W. Stuart Thompson & Assoc., 60 E. 42nd St., New York, N. Y., archts. CD 11/9/61.

▲ **N. Y., Amsterdam**—BA 1/9—Amsterdam City Hospital, Park Ave., HOSPITAL, N. Hampton Rd. and Market St. $2,500,000. Ellerbe & Co., 333 Sibley St., St. Paul, Minn., archts.

▲† **Pa., Pittsburgh**—BA 1/11—General Services Admin., 250 Hudson St., New York 13, N. Y., 23 story, 795,000 sq. ft. FEDERAL OFFICE BLDG., south of Liberty Ave., between Grant St. and Wm. Penn Way, Proj. No. 36901, $15,000,000. Extended date. Prack & Prack-Altenhof & Brown, Martin Bldg., archt. Geo. M. Levinson, 701 Locust St., struct. engr. CD 11/14/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Hendrickson Bros., Inc.,** 63 N. Central Ave., Valley Stream, N. Y., CA **$2,177,100,** Contr. 1144-B, constr. Lawson BLVD. from East Rockaway Rd. southerly and easterly to Long Beach Rd. and connection to Hampton Rd., Oceanside, Town of Hempstead, 10,800 ft. and BRIDGE over Long Island R.R., MINEOLA, N. Y. Dpt. P. Wks. Nassau Co., Old County Court House, Franklin Ave., Mineola, N. Y. BA 11/22. CD 11/27/61, under LB.

▲ **Perini Corp.,** 73 Mt. Wayte Ave., Framingham, Mass., and **Morrison-Knudsen Co., Inc.,** 319 Broadway, Boise, Idaho, CA **$16,160,125,** Proj. W-7, Contr. 500-Tunnel, WATER SUPPLY TUNNEL under Upper New York Bay, Richmond and Manhattan Boros, NEW YORK, N. Y. Bd. Water Supply, 120 Wall St., New York 5, N. Y. BA 11/28. CA 12/5. CD 11/30/61, under LB.

▲ **Marcelletti & Son Constr. Co.,** 25 West Monroe St., Bedford, O., LB (A) **$1,321,170,** LB (B) **$1,548,070,** LB (C) **$1,505,570,** Contr. P-3 South extension-West Side WATER TRANSMISSION MAIN, ROCHESTER, N. Y. Monroe County Water Auth., 339 East Ave., Rochester, N. Y. BA 11/28. CD 11/6/61.

▲ **NEW JERSEY**—State Hy. Comn., 1035 Parkway Ave., Trenton, Bids opened 11/30, ROAD,

P. T. & L. Constr. Co., Inc., 500 St. Hy. 17, Paramus, N. J., LB **$5,463,398,** (6 bidders), constr. approaches both ends Interstate Rte. 80 bridge over Passaic River, Paterson, East Paterson, Passaic and Bergen Counties. CD 10/27/61, under streets and roads.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 11/30, ROADS,

Pa.—No. 1 Contracting Corp. (Pa.) and No. 1 Contracting Corp. (Del.) 800 Exeter Ave., West Pittston, Pa., LB **$2,618,188,** (6 bidders), 10,159 ft. cr. agg. base with bit. surf. 24 ft. wide and 7 bridges, L.R. 1005(4-5), Luzerne Co.;

Pa.—J. Richard Nissley, Inc., Landisville, Pa., LB **$2,477,376,** (4 bidders), 15,380 ft. constr. of separated hy. consisting of c. conc. pvt. 24 ft. wide and 6 bridges, L.R. 792(1) 512(3), Lancaster Co.;

Pa.—The Lane Constr. Corp., 965 E. Main St., Meriden, Conn., LB **$2,587,176,** (9 bidders), 44,484 ft. paving previously graded hy. with c. conc. pvt., 24 ft. wide L.R. 1009(1A-2A), Clarion and Jefferson Counties. CD 11/14/61.

▲ **Henry A. Knott, Inc.,** 2406 Greenmount Ave., Baltimore 18, Md., CA **$1,594,078,** TRANSIT SHEDS, Dundalk Marine Terminal, Dundalk, BALTIMORE, MD. Maryland Port Auth., Pier 2, Pratt St., Baltimore 2, Md. Turpin Wachter & Assoc., 104 N. Charles St., Baltimore 1, Md., consult. engrs. BA 10/31. CD 11/3/61, under LB.

BUILDINGS—LB & CA

▲ **Thomas D. McCloskey & E. K. McCloskey,** 1620 West Thompson St., Phila., Pa., CA Total est. **$8,000,000.** lease-build (Govt. Maintenance), POST OFFICE; BUFFALO, N. Y. Regional Real Estate Mgr., Rm. 5012, Main Post Office, New York 1, N. Y. BA 9/22 CD 10/3/61, under LB.

▲ **Caristo Constr., Corp.,** 26 Court St., Brooklyn 1, N. Y., LB **$3,670,000,** (8 bidders), general contract Proj. NYS-102, CHELSEA HOUSES, W. 26 St., 9 Ave., W. 25 St. and Elliott Houses Proj., excluding northeast corner of this area, also constr. within existing Elliott Houses Proj. bordering Chelsea Houses consisting extension to CHILDREN'S CENTER in Bldg. 1 and ALTERATIONS to HUDSON GUILD BLDG., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y., BA 12/5, CD 11/29/61;

The Norman Co., Inc., 26-16 Skillman Ave., Long Island City 1, N. Y., LB **$407,700,** (3 bidders), heating and ventilating CHELSEA HOMES, etc., Manhattan Boro (New York, N. Y.);

Far Plumbing Co., 2018 Crotona Parkway, New York 60, N. Y., LB **$512,750,** (9 bidders), plumbing, CHELSEA HOUSES, etc., Manhattan Boro (New York, N. Y.).

▲ **Diesel Constr. Co., Inc.,** 642 5 Ave., New York 19, N. Y., CA Est. **$5,000,000,** 20 story OFFICE, 757 3 Ave. and East 47 St., NEW YORK, N. Y. The Durst Organization, 200 East 42 St., New York 17, N. Y. CD 11/3/61.

▲ **Kreisler-Borg Constr. Co.,** 4 Cromwell Pl., White Plains, N. Y., CA Est. **$2,250,000,** 19 story APARTMENT, southwest corner E. 17 St. and 1 Ave., NEW YORK, N. Y. Beth Israel Hospital Assn., Stuyvesant Square and E. 17 St., New York 3, N. Y., Schuman & Lichtenstein, 360 Lexington Ave., New York 17, N. Y., archts. Leo Nowick, 150 E. 35 St., New York 16, N. Y., landescape archt. Robt. Rosenwasser, 375 5 Ave., New York 16, N. Y., struct. engr. Kalfus & Lovett, 234 W. 56 St., New York 19, N. Y., mech. engrs.

▲ **J. Rich Steers, Inc.,** 17 Battery Pl., New York 4, N. Y., LB **$3,441,975** (8 bidders), Contr. 1, GRADING, DRAINAGE, BULKHEAD and DEMOLITION for Bronx Terminal Market for Dpt. of Markets, Halleck St. and East Bay Ave., NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. BA 12/6. CD 11/30/61.

▲ **Leo Silver & Sons,** 1841 Broadway, New York 23, N. Y., Owner Builds, **$2,000,000,** 19 story, 100 x 100 ft. APARTMENT, 201-25 E. 36 St., northwest corner Third Ave., NEW YORK, N. Y. CD 8/8/61.

▲ **B. A. W. Constr. Co.,** 901 Fuhrmann Blvd., Buffalo, N. Y., LB **$2,147,000,** est. $2,600,000, 5 story HOSPITAL, OLEAN, N. Y. Olean General Hospital, Main and Front Sts., Olean, N. Y. BA 11/30. CD 11/22/61.

▲ **L. A. Wenger Contg. Co.,** 88 Golding Ave., West Babylon, N. Y., CA Est. **$5,000,000,** 300,000 sq. ft. SHOPPING CENTER, 6 story OFFICE, THEATRE, BOWLING CENTER, parking area, 18 acres, E. Main St., between Grove and Evergreen Aves., PATCHOGUE, N. Y. Suffolk Development Corp., 392 E. Main St., Patchogue, N. Y. BA 10/13. CD 10/4/61.

▲ **Avella Constr. Co.,** 175 Front St., Vestal, N. Y., LB **$2,638,500,** general contract Northeast SENIOR HIGH SCHOOL, SYRACUSE, N. Y. Dpt. Contracts & Purchase, 318 City Hall, Syracuse, N. Y. BA 11/29, CD 11/7/61;

Louis N. Picciano & Son, 1204 Witherill St., Endicott, N. Y., LB **$444,000** heating and ventilating Northeast SENIOR HIGH SCHOOL (Syracuse, N. Y.).

▲ **Frank Briscoe Co., Inc.,** 287 So. 19 St., Newark, N. J. CA Est. **$6,000,000,** 5 story, 190,000 sq. ft. OFFICE (North Bldg.), at north end of existing facilities, WHITE PLAINS, N. Y. General Foods Corp., 250 North St., White Plains, N. Y. BA 11/17. CD 11/7/61.

▲ **North Glen Homes, Inc.,** Courter Ave., Wayne, N. J., Owner Builds, **$1,500,000,** 80 HOUSES, off Glen Wild Ave., BLOOMINGDALE, N. J. Francis Gerritsen, 118 Passaic St., Garfield, N. J., archt.

▲ **Ramblewood Homes, Inc.,** 116 Forest Rd., Moorestown, N. J., Owner Builds, **$1,625,000,** 65 unit RESIDENTIAL DEVELOPMENT, Stanwick Glen, MOORESTOWN, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ **Herbert Constr. Co.,** 205 East 85th St., New York, N. Y., CA Est. approx. **$2,000,000,** RESTAURANT and OFFICE, northeast corner Broad and Commerce Sts., NEWARK, N. J. Chock Full O'Nuts, 425 Lexington Ave., New York, N. Y. CD 12/4/61.

▲ **Kuhl Constr. Ltd.,** 121 Richmond St. West, Toronto, Ont., Canada, CA Est. over **$3,000,000,** 21 story APARTMENT, Meade Ave., PASSAIC, N. J. Pato Corp., c/o Atlantic Funding Corp., Room 3250, Time Life Bldg., New York, N. Y. Coffey & Levine, 220 East 23 St., New York 10, N. Y., landscape engrs. Farkas & Barron, 5 Beekman St., New York 38, N. Y., struc. engrs. Herman Scherr, 11 Park Pl., New York 7, N. Y., mech. engr. CD 10/5/61.

▲ **Henry Evans,** Mt. View Rd., Mt. Bethel, Plainfield, N. J., Owner Builds, **$1,800,000,** 60 HOUSES, Washington Valley Rd., Warrenville, Warren Twp., PLAINFIELD, N. J. George Fenton, 191 South Ave., Fanwood, N. J., archt. Wm. J. Haggerty, Round Top Rd., Plainfield, N. J., engr.

▲ **Stofflet & Tillotson,** 2043 Eastburn Ave., Phila., Pa., CA Over **$2,500,000,** 308,000 sq. ft. SHOPPING CENTER, GLEN BURNIE, MD. Morris A. Kravitz Co., Inc., 225 S. 15 St., Phila., Pa. Robert Linder Assocs., 4333 East River Dr., Phila., Pa., archts.

▲ **Lacchi Constr. Co.,** 2023 Maryland Ave., Baltimore, Md., LB **$2,228,000,** (7 bidders), Perry Hall JUNIOR HIGH SCHOOL, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson 4, Md. BA 12/5. CD 11/20/61.

▲ **Stofflet & Tillotson,** 2043 Eastburn Ave., Phila., Pa., CA Over **$2,500,000,** 308,000 sq. ft. SHOPPING CENTER, TOWSON, MD. Morris A. Kravitz Co., Inc., 225 S. 15 St., Phila., Pa. Robert Linder Assocs., 4333 East River Dr., Phila., Pa., archts.

SOUTH

BUILDINGS—BA

▲† **Fla., Miami**—BA 1/18—General Services Admin., Room 146C, Region 4, Peachtree-Seventh Bldg., 50 Seventh St., N. E., Atlanta 23, Ga., 16 story penthouse, FEDERAL OFFICE BLDG., 1 story wing, pile foundations, steel framing, floor decking, conc. slabs, composition roofing, Appr. No. 47 x 1147, Proj. No. 08901. CD 9/22/58.

HEAVY CONSTRUCTION—LB & CA

▲ **Triangle Constr. Co.,** Laurens Rd, Greenville, S. C., LB **$1,756,877,** AIRPORT TERMINAL BLDG., CONTROL TOWER, GREER, S. C. Greenville-Spartanburg Airport Comn., P.O. Box 5133-B, Greenville, S .C. BA 11/28/61. CD 11/8/61.

▲ **Sullivan, Long & Hagerty,** 801 5th Ave. N., Birmingham, Ala., LB **$2,182,100,** SEWAGE TREATMENT PLANT, Contr. A, DALTON, GA. City, City Hall, Dalton, Ga. BA 11/28/61. CD 10/18/61.

BUILDINGS—LB & CA

▲ **Blythe & Isenhour,** P.O. Box 11332, Charlotte, N. C. CA Est. **$1,600,000,** 96 unit Greensboro Tower APARTMENTS, SWIMMING POOL, GREENSBORO, N. C. Tower Holding Corp., 435 S. Tryon St., Charlotte, N. C. CD 10/12/61.

▲ **Daniel Constr. Co.,** 429 N. Main St., Greenville, S. C., CA Est. **$7,000,000,** METAL FABRICATING PLANT, SPARTANBURG, S. C. Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, O.

▲ **Holiday Supplies, Inc. of Louisiana,** 2818 Cupid, New Orleans, La., Owner Builds, **$3,500,000,** five 2 story, 187-unit APARTMENTS, SWIMMING POOL, 41½ acre tract Robert E. Lee Blvd.; **$2,000,000,** 3-level, 87 unit APARTMENT, 3201 St. Charles, NEW ORLEANS, LA.

▲ **Quinn Constr. Co., Inc.,** 2222 Burgundy St., New Orleans, La., CA Est. **$3,000,000,** 150,000 sq. ft. SHOPPING CENTER, St. Claude Ave., Carolyn Park, ARABI, LA. Arabi Properties, Inc., co Johness Realty, Inc., Whitney Bldg., New Orleans, La. Curtis & Davis, 2475 Canal St., New Orleans, La., archts. J. J. Krebbs & Assocs., 305 S. Murat St., New Orleans, La., engrs. CD 10/5/61.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Ill., **Park Ridge**—BA 12/28—Office of City Clerk, City Hall, SOUTH SIDE RELIEF SEWERS, incl. furnishing installing approx. 8,035 ft. 36- to 84-in. rein.-con sewer pipe, related appurtenances. Plans deposit $25. Hazen & Sayer, 360 Lexington Ave., New York 17, N. Y. engrs. CD 2/2/60.

BUILDINGS—BA

▲ **O., Cleveland**—BA 12/20—St. Vincent's Charity Hospital, 2222 Central Ave., Zone 15, (selected list of bidders), RESEARCH CENTER, LAUNDRY, BOILER PLANT, X-RAY DPT. Over $2,000,000. Schafer, Flynn & Williams, 1740 E. 12th St., Zone 14, archts. CD 8/18/55.

HEAVY CONSTRUCTION—LB & CA

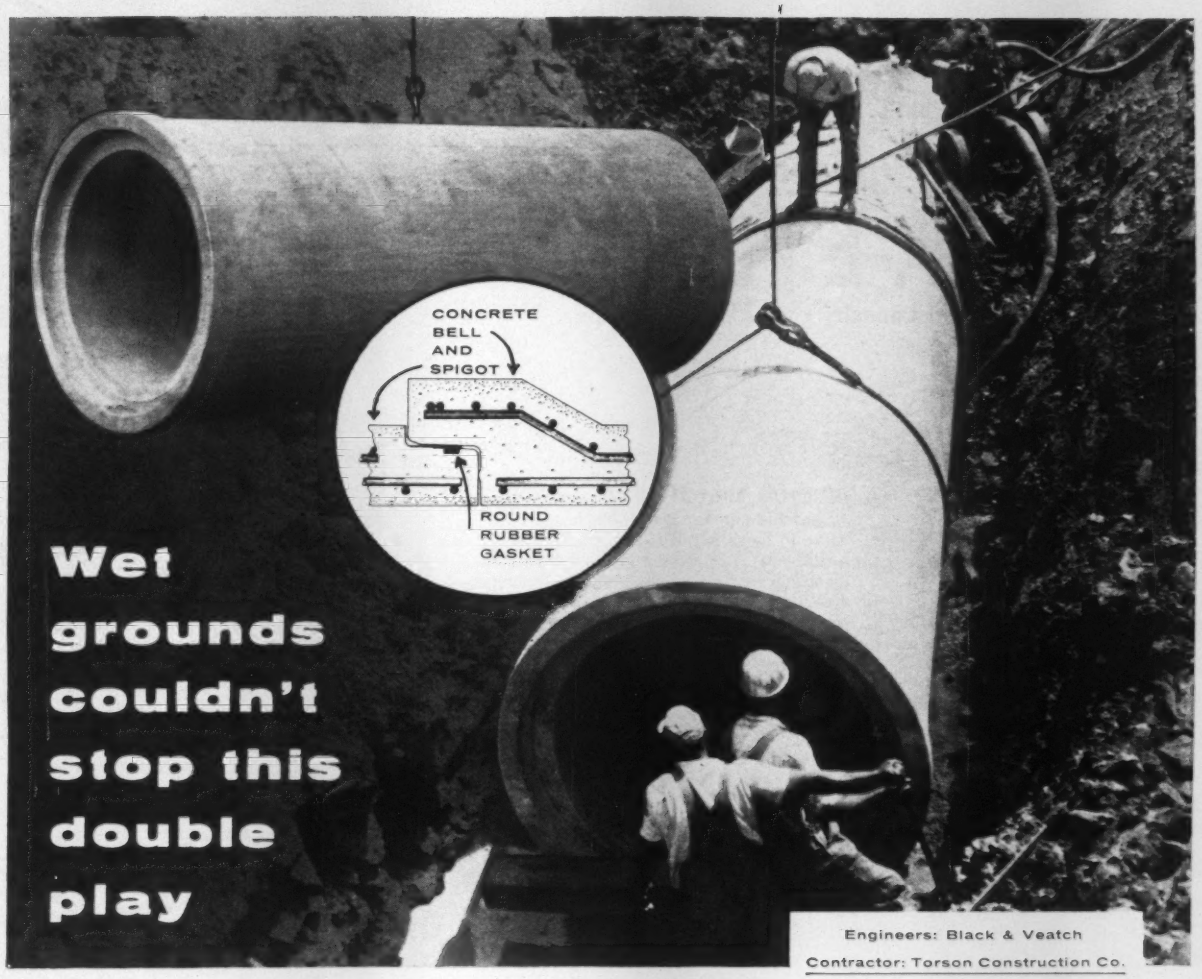
▲ **OHIO**—State Dpt. Hys., State Dpts. Bldg., Columbus, Zone 15, ROADS,

O.—**Miller Bros., Inc. and Harper Supply, Inc.,** RFD 2, Napoleon, O., CA **$2,402,126,** Type T 71 and structures 6.524 mi. USR 24, Section 7.44, F-487(7) Proj. 708, Defiance Co.;

O.—**A. J. Baltes, Inc.,** 11 Olive St., Norwalk, O., CA **$4,558,749,** Type T 71 and structures 5.046 mi. SR 2, Section 4.02, USR 6, Section 3.80 F FG 1042(5), Margaretta and Perkins Twps., Proj. 709 Erie Co. BA 11/14/61. CD 11/16/61, under LB.

▲ **S. A. Healy Co. & Gargaro Co.,** 6551 E. 7 Mile Rd., Detroit 34, Mich., CA **$3,258,503,** Contr. 2, 15,700 lin. ft. 8 ft. 6 in. SEWERS in tunnel, Rouge Valley Sewage Disposal System, DETROIT, MICH. Wayne County Bd. P. Wks., Rm. 1322, City-County Bldg., Detroit 26, Mich. BA 11/21. CD 11/27/61, under LB.

(Continued on page 64)



A-M REINFORCED CONCRETE PIPE with CONCRETE and ROUND RUBBER JOINTS

The problem:

Installation of 8,000 ft. of concrete sewer pipe running parallel to a creek and below its water level. The problem was complicated by numerous springs and unstable ground conditions so serious as to allow opening the trench for only one or two lengths of pipe at a time.

The solution:

Long lengths of A-M's 60″ C. & R. R.* pipe reduced the total number of necessary joints. Quick, easy fitting of the joints cut installation time in spite of the problem of poor ground conditions. Tight joints far exceeded the maximum infiltration requirement for this Johnson County, Kansas project.

Write our technical staff for help in solving your problem.

*American-Marietta's Concrete And Round Rubber Joint.

MARTIN MARIETTA CORPORATION

CONCRETE PRODUCTS DIVISION

101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

New floor system combines mechanical and electrical services

GRANCO A-E FLOOR

Design Flexibility • Increased Capacity • Ease of Installation

FOR ANY STRUCTURAL SYSTEM

A-E (Air-Electric) floor system fits any type construction—remodeling as well as new. Eliminates most horizontal air ducts. Reduces height between floors. Mechanical and electrical services can easily be expanded to meet future requirements.

OPTIMUM AIR CAPACITY

Adjustable supports permit the height of air space to be varied to meet any capacity requirements. A 3″ plenum height will provide all the air normally required for low velocity systems. Adjustment assures level finish floor compensating for dead load deflection and irregularities in structural slab.

ELECTRICAL FLEXIBILITY

Conventional header ducts feed large capacity cells that carry wiring to pre-set inserts and standard electrical fittings. Pre-set inserts provide ready access for adding telephones, intercoms, lighting, and electrical service. No costly drilling to expand future service requirements.

AIR DISTRIBUTION CONTROL
Corrugated galvanized steel serves as form for finish floor slab and forms the top of an unobstructed air plenum. Baffles are used to zone air to desired areas. Perimeter discharge opening can be continuous or spaced as desired.

A-E FLOOR COMPLETE
Sill can be located at any height—important in curtain wall constructions. Speedy placement of air terminals, air grilles, and standard electrical outlets completes your A-E Floor System.

For additional information and details, write for A-E Floor catalog No. AE-601 (A.I.A. File No. 30). GRANCO STEEL PRODUCTS CO., 6506 N. Broadway, St. Louis 15, Mo. A Subsidiary of Granite City Steel Company.

A-E FLOOR

a floor system providing air and electrical distribution

GRANCO

A-E FLOOR • TUFCOR® • CORRUFORM® • COFAR® • E/R COFAR® • ROOF DECK • UTILITY DECK • GRANCO VIN-COR • S-I-P BRIDGE FORMS® • PAVEMENT JOINTS • FREE FLOW SUBDRAIN

(Continued from page 60)

Santucci Constr. Co., Skokie, Ill., CA $1,597,600, Contr. 4, 4,200 lin. ft. SEWERS, 6 ft. 6 in. to 5 ft. 0 in. in tunnel, 11,100 lin. ft. 8 ft. 6 in. to 5 ft. 0 in. in open cut, Rouge Valley Sewage Disposal (Detroit, Mich.).

BUILDINGS—LB & CA

▲ **Charles V. Maescher & Co., Inc.**, 2106 Florence Ave., Cincinnati, O., CA Est. $4,000,000, 9 story DEPARTMENT STORE ADDN., ALTERATIONS, CINCINNATI, O. Mabley & Carew Co., Div. Allied Stores, Inc., 5th and Vine Sts., Cincinnati, O. BA 11/24/61. CD 11/9/61.

▲ **Hunkin-Conkey Constr. Co.**, 1740 E. 12th St., Cleveland 14, O., CA $7,572,700, 782 unit low cost Riverview Terrace HOUSING, CLEVELAND, O. Cleveland Metropolitan Housing Auth., 1332 W. 28th St., Cleveland, 13, O. BA 11/9/61, CA 11/29/61. CD 11/13/61, under LB.

▲ **Concept Homes**, 305 S. Main St., Dayton 2, O., Owner Builds, $12,000,000, $2,000,000 first year (five year program), 750 HOMES, COUNTY Line and Indian Hippie Rds., Beavercreek Twp., DAYTON, O.

▲ **G & S Building Co. of Ohio**, 1325 W. Erie Ave., Lorain, O., Owner Builds, $5,000,000, $1,000,000 first year (3 year program), 350 Kimberly Oaks HOMES, LORAIN, O.

▲ **Turner Constr. Co.**, 105 W. Adams St., Chicago 3, Ill., CA Est. $3,000,000, 8 story, 2 bsmnt., 71,000 sq. ft. structural frame, rein.-con., concrete ADMINISTRATION BLDG., 55 E. Erie St., CHICAGO, ILL. American College of Surgeons, 40 E. Erie St., Chicago, Ill. BA 11/2/61. CD 10/23/61.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **Iowa**—BA On Or About 1/23—U. S. Eng., Clock Tower Bldg., Rock Island, DAM, STAGE II, SPILLWAY and CONCRETE OVERFLOW SECTIONS, Red Rock Reservoir, Des Moines River, CIVENG-11-117-62-19. Plans deposit $10. CD 10/4/61.

▲† **Tex., Houston**—BA About 2/15—U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Zone 4, SITE DEVELOPMENT and UTILITY INSTALLATION for manned spacecraft center constr., for National Aeronautics & Space Administration. Over $4,000,000. CD 9/26/61, under Public Buildings.

BUILDINGS—BA

▲ **Minn., St. Paul**—BA 12/21—Lyngblomsten Society, 1298 N. Pascal St., first phase, 100-150-bed INFIRMARY, Midway Parkway and Pascal St. $1,000,000. Total cost proj. $10,000,000-$12,000,000. Plans deposit $25, general. Sovik, Mather & Madson, 300 S. Water St., Northfield, archts. Oftedal, Locke, Broadston & Assocs., Inc., Sexton Bldg., Minneapolis, engrs. CD 7/29/60.

▲ **N. J., Roselle Park**—BA 12/21—Bd. Educ. Boro Roselle Park, 30 W. Clay Ave., HIGH SCHOOL, Webster Ave. $2,500,000. Emil Schmidlin, 50 Evergreen Pl., East Orange, archt. CD 3/20/61.

▲† **Mo., Fort Leonard Wood**—BA 1/11—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., three 2-Company EM BARRACKS, CONSOLIDATED MESS and ADMINISTRATIVE and STORAGE BLDG., ENG-23-028-62-21. $3,000,000. Plans deposit $10. Extended date. CD 11/22/61.

▲ **Colo., Denver**—BA 1/30—General Services Admin., Bldg. 41, Room 2019, Denver Federal Center, Denver, 18 story OFFICE BLDG., 5 story COURTHOUSE, subbasement, basement, penthouse, approx. 747,000 sq. ft. floor area, concrete fdns., piers, concrete, structural steel, steel joists, steel decking, Appr. No. 47X1147, Proj. No. 05900. CD 1/26/59.

BUILDINGS—SLC

▲ **Colo., Denver**—F. R. B. Corp., c/o Ramsey & Reeves, archts., 882 S. Lipan St., soon lets contract, 12 story, 140,000 sq. ft. MEDICAL OFFICE, 20th and Franklin St., $3,500,000. CD 11/14/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Brown & Root**, 4100 Clinton Drive, Houston, Tex., CA Est. $2,500,000, 133 mi. 6 in. PRODUCTS LINE, Mt. Pleasant to Grapevine, TEXAS. American Liberty-Pipe Line Co., Box 772, Mt. Pleasant, Tex., Pipe-Line Technologists, 3431 W. Alabama, Houston, Tex., engr. CD 7/25/61, under American Petrofina Co. Texas, Houston, Tex., as owners.

▲ **Thomas Contg. Co.**, c/o Bi-Stone Fuel Co, owner, Corscana Tex., CA $2,790,000, 100 mi. 16 in. NATURAL GAS LINE from Bethel, Anderson Co. to Merit, in Hunt Co.; CA $372,000, 30 mi. 10 in. NATURAL GAS LINE from Merit toward Denton; CA $380,000, 30 mi. 10 in. NATURAL GAS LINE, from Merit, north to Savoy, near Bonham, Merit, TEXAS. Grand total $3,542,000. CD 9/14/61.

▲ **Texas Gulf Constr. Co.**, 2215½ Mechanic St., Galveston, Tex., LB $2,373,000, est. $1,400,000, RE-CONSTR. PIER NO. 41, GALVESTON, TEX. Galveston Wharves, Galveston, Tex. BA 11/29/61. CD 11/10/61.

▲ **Lee-Emmert Co. & O'Rourke Constr. Co.**, 4011 Koehler St., Houston, Tex., LB $2,840,277 (8 bidders), GRAIN ELEVATOR EXPANSION, incl. two storage bins, each with 88 round bins, 80x23 ft., 2½ million bu. cap., HOUSTON, TEX. Port Comn., 1519 Capitol Ave., Houston, Tex. BA 11/21/61. CD 10/23/61.

BUILDINGS—LB & CA

▲ **Holiday Inn Chain**, 303 VFW Bldg., Topeka, Kan., Owner Builds, $1,500,000, HOLIDAY INN OFFICE, Grays Lake, DES MOINES, IOWA.

▲ **Hydrocarbon Constr. Co.**, 4604 Main St., Houston, Tex., CA $2,600,000, OXYGEN-NITROGEN PLANT; $115,000, 2 mile long OXYGEN-NITROGEN PIPELINES, HOUSTON, TEX. Linde Co. (Div. of Union Carbide Corp.), 3839 W. Alabama St., Houston, Tex. CD 7/21/60.

▲ **Norwood Homes Constructors**, 5623 Effingham St., Glen Norwood, Houston, Tex., Owner Builds, $1,584,000, 88 DWELLINGS, Westbury Subdivision, HOUSTON, TEX.

▲ **Scientific Design Co., Inc.**, 2 Park Ave., New York 16, N. Y., CA, design and construct PLANT to reproduce vinyl monomer, 45 million lbs./yr., TEXAS CITY, TEX. Monsanto Chemical Co., 2472 Bolsover St., Houston, Tex. CD 4/13/50.

▲ **E. I. du Pont de Nemours & Co.**, du Pont & Nemours Bldg., Wilmington, Del., Owner Builds, $2,750,000, AMMONIA PRODUCTION PLANT ADDN., $140,000, WAREHOUSING, VICTORIA, TEX.

▲ **Newstrom Davis & Co.**, P.O. Box 366, Denver, Colo., LB $2,377,567, MEDICAL OFFICE BLDG., DENVER, COLO., F.R.B. Corp., c/o Ramsey & Reeves, archts., 822 S. Lipan St., Denver, Colo. BA 12/1/61. CD 12/4/61.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Long Beach**—BA 1/9—Long Beach Harbor Dpt., 925 Harbor Plaza, ROCK DIKES and HYDRAULIC FILLS for Piers J and F Extension. $15,000,000-$22,000,000. CD 2/5/58.

▲ **Calif., San Jose**—BA 1/31—City of San Jose City Clerk, City Hall, Rm. 408, First and Mission Sts., San Jose-Santa Clara SEWAGE TREATMENT WORKS IMPRVS.

Div. A, aeration, nitrification and final tank batteries. Plans deposit $70.

Div. B, blower and service wing, administration bldg., pump and engine bldg. addn., grit bldg. superstructure, sludge control bldg. superstructure, service station, control bldg. "B" (primary tanks), storage bldg. Plans deposit $140.

Div. C, major SEWERS and CHANNEL constr. Plans deposit $30.

Div. D, screen and grit units; preaeration and primary tanks; sludge concentration units; sludge digesters; tunnels and outside piping; site development; sludge lagoons, misc. Plans deposit $110. Consoer, Townsend & Assocs., 360 East Grand Ave., Chicago 11, Ill., engrs. CD 2/13/61.

▲† **Washington**—BA 2/1—U. S. Eng., City-County Airport, Walla Walla, GRADING, FILL, PILING, CEMENT CONCRETE STRUCTURES for south shore construction, Lower Monumental Dam, CIVENG-45-164-62-22. Over $10,000,000. Plans deposit $10. CD 10/4/61.

BUILDINGS—BA

▲† **Calif., Sunnyvale**—BA 12/27—Lockheed Missile Systems Div., Lockheed Aircraft Corp., P.O. Box 504, Sunnyvale, STRUCTURAL STEEL for 238,000 sq. ft. plant addn. Total est. $4,000,000. CD 7/28/58.

▲ **Calif., San Jose**—BA 1/4—State Div. Architecture, 1120 N St., Sacramento, 80,500 sq. ft. women's PHYSICAL EDUCATION RECREATION ADDN., W.O. AD14 020 C, $1,500,000, Plans deposit $75; Phase II, extend STEAM SERVICES, W.O. AD14 022 C, $94,600, Plans deposit $25, above work at San Jose State College. CD 5/6/60.

▲† **Wash., Fort Lewis**—BA 1/9—U. S. Eng., 1519 Alaskan Way S, Seattle, 500 unit CAPEHART HOUSING. Jones, Lovegrew, Holms & Jones, Republic Bldg., Seattle, Wash., archts. CD 11/27/61, under LB.

▲† **Calif., Palo Alto**—BA 1/30—Veterans Admin., Munitions Bldg., Wash., D. C., ALTERATIONS TO BLDGS. 101, 102, 103, 105, 110, 137 and 205, Veterans Admin. Hospital. Stone, Marraccini & Patterson, 536 Mission St., San Francisco, archts. CD 8/28/61.

▲† **Calif., Sunnyvale**—BA 3/12—Lockheed Missile Systems Div., Lockheed Aircraft Corp., P.O. Box 504, Sunnyvale, constr. and site work 238,000 sq. ft. PLANT ADDN. Total est. $4,000,000. CD 7/28/58.

BUILDINGS—SLC

▲ **Calif., San Diego**—Westgate California Corp., c/o C. Arnholt Smith, U. S. National Bank, 202 Broadway, Zone 1, soon lets contract 25 story, 438,000 sq. ft. U. S. National BANK and OFFICE, 2nd and Broadway. Approx. $5,000,000. Raymond Harry Ervin & Assoc., 1500 Denver Club Bldg., Denver, Colo., archts CD 11/20/61.

HEAVY CONSTRUCTION—LB & CA

▲ **IDAHO**—State Hy. Dpt., Ames, Bids opened 11/28, ROAD,

Rogers Constr. Co., 11760 N.E. Glisan St., Portland, Ore., LB $1,995,423 (5 bidders), 4-lane divided roadway, drainage structures, plant mix bit. surf., 220 ft. concrete underpass 5.148 mi. Interstate 15, Oneida Co. CD 11/2/61.

▲† **Baldwin-Lima-Hamilton Corp.**, Philadelphia National Bank Bldg., Phila., Pa., CA $15,486,900, thirteen HYDRAULIC TURBINES, installed Lower Monumental and John Day Dams, Inv. 61-46, WASHINGTON, U. S. Eng., City-County Airport, Walla Walla, Wash. BA 7/27/61. CD 7/31/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, ROAD,

Miles-Sierra General Contractors, P.O. Box 859, Merced, Calif., CA $2,989,667, grading, surf. 6.4 mi. four lane freeway, State Sign Rte. 198 near Lemoore Naval Air Station, Kings Co. BA 11/8. CD 10/11/61, under LB.

▲† **A. S. Schulman Electric Co.** and **Commonwealth Electric Co.**, 1901 Y St., Lincoln, Neb., LB Sched. 1, $8,275,983, est. $6,868,355, LB Sched. II, $2,330,033, est. $1,950,506, (4 bidders), 230-kilovolt TRANSMISSION LINES, Gas Point Rd.-Elverta, Elverta-Hedge and Hedge-Tracy, Trinity River Div., Central Valley Proj. Shasta, Tehama, Glenn, Colusa, Sutter, Sacramento, San Joaquin, Contra Costa and Alameda Counties, Spec. No. DC 5689, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Petersen Bldg., 238 South Main St., Red Bluff, Calif. BA 12/5. CD 10/23/61.

▲† **Utah Construction & Mining Co.**, 550 California St., San Francisco, Calif., LB $1,846,913, est. $1,830,210, (15 bidders), Sched. B; LB $1,846,913, est. $1,773,380, (15 bidders), Sched. D, COMPOSITE MEDICAL FACILITIES, Spec. No. 2780, ENG-04-167-62-14, near Merced, CASTLE AIR FORCE BASE, CALIF. U. S. Eng., 1209 8 St., Sacramento, Calif. BA 11/28, CD 10/24/61;

Acme Constr. Co., 119 East Granger Ave., Modesto, Calif., LB $1,849,000, est. $1,841,600, (15 bidders), Sched. A of COMPOSITE MEDICAL FACILITIES (Castle Air Force Base, Calif.);

Montgomery, Ross & Fisher, Inc., 10835 Santa Monica Blvd., Los Angeles, Calif., LB $1,851,000, est. $1,814,280, (15 bidders), Sched. C, COMPOSITE MEDICAL FACILITIES (Castle Air Force Base, Calif.).

▲ **City of San Diego**, Rm. 161, Civic Center Bldg., San Diego 1, Calif., rejected bids Nov. 8, SEWAGE TREATMENT PLANT, Point Loma, SAN DIEGO, CALIF. LB $4,500,000 CD 11/10/61, under LB.

BUILDINGS—LB & CA

▲ **Brazier Constr. Co.**, 309 Pontius Ave., Seattle, Wash., LB $1,674,000 (8 bidders), BAGLEY HALL ADDN., ALTERATIONS, SEATTLE, WASH. University of Washington, Seattle 5, Wash. BA 12/5/61. CD 11/20/61.

▲ **John E. Branagh & Son**, 42 LaSalle Ave., Piedmont, Calif., LB $2,539,500, Le Conte HALL ANNEX for PHYSICS for University of California, BERKELEY, CALIF. Regents of University of California, c/o Office Architects and Engineers, University of California, Berkeley, Calif. Warnecke & Warnecke, 55 New Montgomery St., San Francisco, Calif., archts. John A. Blume & Assocs., 612 Howard St., San Francisco, Calif., engrs. CD 5/13/60.

▲ **Ten Construction Companies**, 6053 Atlantic Ave., Long Beach, Calif., CA $2,037,000, BRANCH CONSERVATION CENTER for Dpt. Corrections, W.O. AB10 015 C, CHINO, CALIF. State Dpt. P. Wks., 1120 N St., Sacramento, Calif. BA 11/22. CA 11/29. CD 11/28/61, under LB.

▲ **Coordinated Constr. Co.**, 12901 Crenshaw Blvd., Hawthorne, Calif., CA $1,750,000, OFFICE, 1800 E. Imperial Hy., EL SEGUNDO, CALIF. Kilroy Messenger Co., 618 S. Spring St., Los Angeles 14, Calif.

▲ **Huber, Hunt & Nichols, Inc.**, Tibbs Ave., P. O. Box 128, Indianapolis, Ind., CA Est. $8,000,000, AUTOMOBILE MANUFACTURING PLANT, Fremont Blvd. and Eastshore Hy., FREMONT, CALIF. Argonaut Realty Co. Div. General Motors Corp., General Motors Bldg., Detroit, Mich. BA 11/14. CD 10/31/61.

▲ **McKee Constr. Co.**, 5493 University Ave., San Diego 5, Calif., LB $1,821,000 (12 bidders), BLDG. "C", University of California, San Diego at La Jolla, LA JOLLA, CALIF. Office Architects & Engineers, Bldg. T-8, University of California, San Diego at La Jolla, Calif. BA 12/1. CD 11/10/61.

▲ **Pacific Coast Builders**, 1 S. Park, San Francisco, Calif., CA $1,980,000, CAL 3/11 & CAL 3-88, Lockwood Annex low-rent HOUSING between 66 and 69 Aves., OAKLAND, CALIF. City Housing Auth., 935 Union St., Oakland, Calif. CA 11/22. CD 11/27/61, under LB.

▲ **J. B. Allen & Co.**, 36 E. Mason St., Santa Barbara, Calif., CA $2,197,000, est. $3,000,000, RESIDENCE HALL, Unit 4 and DINING COMMONS NO. 2 ADDN., University of California, Goleta, SANTA BARBARA, CALIF. University of California at Santa Barbara, Goleta, Santa Barbara, Calif. BA 10/31. CA 11/17. CD 11/6/61, under LB.

▲ **Stolte, Inc.**, 8451 San Leandro St., Oakland, Calif., CA $5,078,000, est. $5,546,913, 6 floors and uncompleted 7th floor, 245,000 sq. ft. County COURTHOUSE, STOCKTON, CALIF. San Joaquin Co., Courthouse, Stockton, Calif. BA 11/7. CA 11/17. CD 11/14/61, under LB.

CANADA

BUILDINGS—BA

▲ **Que., Montreal**—BA 12/27—Secondary School Bd. of the County of Chambly, c/o Marc Cinq-Mars, archt., 1980 Sherbrooke St. W., two SCHOOLS, Cure Poirier and Blvd. Taschereau, Jacques Cartier. $2,500,000. Plans deposit $200. CD 9/25/61.

▲ **Alta., Ponoka**—BA 12/28—Alberta Govt., Parliament Bldgs., Edmonton, general, electrical and mechanical contracts for rein.-con. ADMINISTRATION and RECEPTION BLDG. at Mental Hospital. Plans deposit $400.

BUILDINGS—LB & CA

▲ **A. R. Grimwood Ltd.**, 1129 Kingsway, Vancouver, B. C., LB $1,696,640, (8 bidders), 4 story, rein.-con. VANCOUVER VOCATIONAL INSTITUTE ALTERATIONS, ADDN., 250 W. Pender St., VANCOUVER, B. C. School Dist. No. 39, 1595 W. 10th St., Vancouver, B. C. BA 11/29/61. CD 11/15/61.

▲ **Drake Constr. Co., Ltd.**, 155M-1485 Portage Ave., Winnipeg, Man., LB $2,039,576, (23 bidders), low cost HOUSING, Canadian Military Camp, CAMP SHILO, MAN. Central Mortgage & Housing Corp., Montreal Rd., Ottawa, Ont. BA 11/28/61. CD 11/17/61.

▲ **V. K. Mason Constr. Co., Ltd.**, 160 Eglinton Ave. E., Toronto, Ont., CA $4,600,000, (11 bidders), 5

and 6 floor HOSPITAL ADDN., COOKSVILLE, ONT. South Peel Hospital, Upper Middle Rd., Cooksville, Ont. BA 11/2/61. CD 10/19/61.

▲ **Doran Constr. Co., (1960) Ltd.**, 5 Concord St., Ottawa, Ont., CA Est. **$1,500,000**, 12 story, 61x267 ft., brick, cinder block APARTMENT, concrete fdn., Lot 15, Junction Gore, OTTAWA, ONT. Riverside Dr. Development Ltd., 5 Concord St., Ottawa, Ont. Ronald Ogilvie, 272 Somerset St. W., Ottawa, Ont., archt.

▲ **Cullen Constr. Co., Ltd.**, 6 Halsey Blvd., Toronto, Ont., CA Est. **$1,300,000**, Victoria Park SENIOR SECONDARY SCHOOL ADDN., TORONTO, ONT. North York Bd. Educ., 15 Oakburn Crescent, Toronto, Ont. BA 11/13/61. CD 10/31/61.

▲ **Stanford Investments Co.**, c/o David Reich, archt., 5810 Cote St. Luc Rd., Montreal, Que., Owner Builds, **$1,500,000**, 17 story APARTMENT, Cote des Neiges Rd. and Seaforth Aves., MONTREAL, QUE. Spevack & Gross, 5810 Cote St. Luc Rd., Montreal, Que., assoc. archts. CD 4/4/60.

▲ **W. Rourke Ltd.**, 2 Ave. St. Sacrement, Quebec City, Que., CA Est. **$1,700,000**, 5 story TELEPHONE EXCHANGE BUILDING EXTENSION, Place d'Aiguillon and d'Youville St., QUEBEC CITY, QUE. Bell Telephone Co. of Canada, 1050 Beaver Hall Hill, Montreal, Que. BA 11/8/61. CD 10/19/61.

▲ **Smith Bros. & Wilson Ltd.**, 524 2nd Ave. N., Saskatoon, Sask., LB **$2,274,000**, HOSPITAL, PRINCE ALBERT, SASK. Holy Family Hospital Bd. of Prince Albert, Prince Albert, Sask. BA 11/29/61. CD 11/24/61.

PUERTO RICO

BUILDINGS—SLC

▲ **Puerto Rico, Santurce**—Enterprise Development Corp., San Juan Bank Bldg., San Juan, soon lets contract 24 story, 400-room, rein.-con. SHERATON HOTEL. Toro-Ferrer, 560 Monserrate, Santurce, Puerto Rico, archt. CD 12/1/61.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Brazil, Rio de Janiero**—BA 12/25—Superintendency of Urbanization & Sanitation, State of Guanabara, Rio de Janiero, 1.3 mi. Section I, TRAFFIC TUNNEL, double lane, linking southern and northern residential areas. $4,700,000.

▲ **Ecuador, Guayas**—BA 1/30—Direccion Estudios de la Direccion General de Obras Publicas, Quito, OIL PIPELINE and 1 m.g.d. WATER MAIN between Santa Elenas and Duran, Guayas Province. Extended date. CD 9/28/61.

HEAVY CONSTRUCTION—LB & CA

▲ **ARGENTINA**—Direcc. Nacional Vialidad, Av. Maipu 3, Buenos Aires, ROADS,

Argentina—**Empresa Argentina De Construcciones Publicas**, Belgrano 687, Buenos Aires, Argentina, CA **$20,000,000**, 161 mi. basic work and flexible paving R. 11, M. Belem-Puerto Pilcomayo, El Chaco and Formosa Province, CD 9/12/61;

Argentina—**Cia Argentina De Obras Publicas**, Belgrano 697, Buenos Aires, Argentina, CA **$5,000,000**, 56 mi. basic work and flexible paving Hy. Junin-Teodolina and Access Rds., Buenos Aires Province;

Argentina—**Vialco**, Belgrano 3252, Buenos Aires, Argentina, CA **$22,500,000**, 140 mi. basic work, flexible paving and complementary works, Prov. Rte. 41, Barradero-Norte G. Belgrano-San A. De Giles-Lobos-Navarro, Barradero, Buenos Aires Province;

Argentina—**Gardblea S. A.** Cordoba 954, Rosario, Santa Fe Province, Argentina, CA **$3,880,000**, Provincial R. 16, San Lorenzo-Roldan-Villa Esther, San Lorenzo, Santa Fe Province. Grand total $51,380,000. CD 11/21/61.

▲ **Vianini & Supercemento**, Belgrano 3252, Buenos Aires, Argentina, CA Est. **$21,880,000**, 96 mi. AQUEDUCT from Rio Senguerr to Comodoro Rivadavia City for Potable Water Plant, Comodoro Rivadavia, Churbut Province, ARGENTINA. Obras Sanitarias De La Nacion, Dpt. Govt. Buenos Aires, Argentina.

▲ **E. Degremont**, Piedras 383, Buenos Aires, Argentina, CA Est. **$1,500,000**, RAPID WATER FILTER BATTERY, FILTERS 1,500 meters sup. and 5 m.g. UNDERGROUND DEPOSIT FILTERED WATER WORK, in Rosario, SANTA FE, ARGENTINA. Obras Sanitarias De La Nacion, Dpt. Govt., Buenos Aires, Argentina.

BUILDINGS—LB & CA

▲ **Field Argentina S. A.**, c/o Venezuela 770, Buenos Aires, Argentina, CA Est. **$14,000,000**, 2,000 units HOUSING, Rosario, Santa Fe Prov.; CA Est. **$7,000,000**, 1,000 units HOUSING, Cordoba City, Cordoba Prov., ARGENTINA. Ministry of P. Wks. & Services, Dpt. Govt., Buenos Aires, Argentina.

▲ **Tumagra & Sastre S. R. L.**, Alsina 1282, Buenos Aires, Argentina, CA Est. **$1,310,000**, Proj. 2, POWER PLANT at Necochea, BUENOS AIRES, ARGENTINA. Direcc. De Energia de Prov. De Buenos Aires, Dpt. Govt., La Plata, Argentina.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Hong Kong**—BA 2/16—Govt. Hong Kong, Secretary of Tender Bd., Colonial Secretariat, Central Govt. Offices, Lower Albert Rd., Hong Kong, Plover Cove and Hebe Haven WATER SCHEME, (P.W.D. Contr. No. 103 of 1961), Lower Shing Mun DAM and adjoining TUNNELS; 180 ft. high dam, 1½ million cu.yd. earth and rockfill; 1½ mi. 22 ft. and 1 mi. 10½ ft. equivalent diameter tunnel, shafts and stream intakes, concrete supply basin dam, bellmouth spillway and other ancillary works. Tender documents and further particulars may be obtained from offices Binnie, Deacon & Gourley, Artillery House, Artillery Row, Westminster, London, S.W. 1, England, or Scott & Wilson, Kirkpatrick & Partners, Manson House, Nathan Rd., Hong Kong, consult. engrs., on deposit of cheque for H.K. $400 or £25 refundable only on receipt of a bona fde tender.

For additional reports see CONSTRUCTION DAILY REPORTS SECTION

PROPOSED PROJECTS

WATER SUPPLY

▲ **Fla., Miami**—City, Dpt. Water & Sewers, 3342 Pan American Dr., WATER TREATMENT PLANT, 1-17 m.g. reservoir, 1-9 m.g. reservoir, piping, Hialeah, **$10,000,000**. First Phase 1962.

▲ **Mich., Port Huron**—City, City Hall, 201 Broad St., 20 m.g. WATER FILTRATION PLANT. **$3,500,000**. Ayres, Lewis, Norris & May, 500 Wolverine Bldg., Ann Arbor, consult. engrs. Bids 1962-1963.

▲ **Ore., Eugene**—Eugene Water & Electric Bd., 500 E. 4th Ave., voted $1,850,000 bonds WATER SYSTEM IMPRV. **$2,723,000**. BA next spring. Byron Taylor, city engr.

SEWERS, WASTE DISPOSAL

▲ **Kan., Overland Park**—City, City Hall, STORM DRAINAGE FACILITIES. **$5,765,000**. Constr. to start 3/1/62.

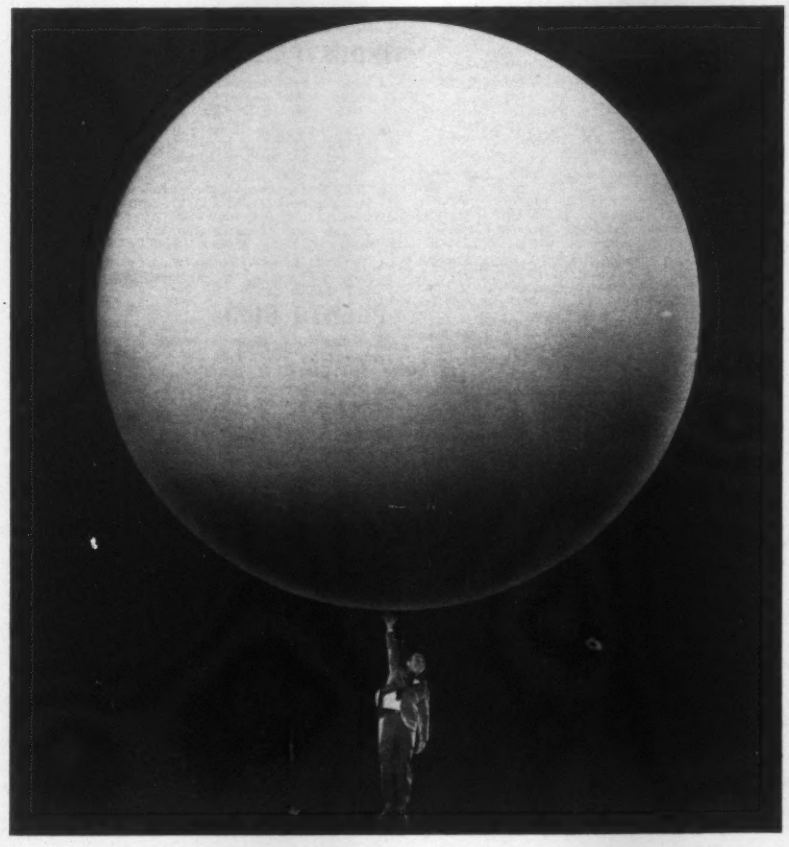
▲ **Kan., Pittsburg**—City, City Hall, STORM SEWERS, STORM DRAINS and INLETS REPAIRS. **$2,812,950**. Constr. to start April 1963.

▲ **Wash., Bellevue**—Eastgate Sewer Dist. voted **$4,000,000** bonds Nov. 21, SANITARY SEWERAGE SYSTEM, Eastgate Area. Hill & Ingman, 3108 Western Ave., Seattle, consult. engrs. BA 9/15/62. CD 10/17/61.

BRIDGES

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, BRIDGES,

Clarion Co.—Keystone Shortway bridge over Clarion River, Interstate Rte. 80, and 5 mi. RCC divided Hy., bet. point 0.2 mi. east of L. R. 16033 and 700 ft. east of Clarion River, **$14,730,000**, Modjeski &



STRENGTH

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Masters, 6th and Forster Sts., Harrisburg consult. engrs.

Union and Northumberland Counties—White Deer Bridge over Susquehanna River, west branch, for Keystone Shortway, Interstate Rte. 80, $3,000,000. F. S. Poorman, c/o owner, engr. CD 7/23/58, under Streets & Roads.

▲ **SOUTH DAKOTA**—State Dpt. Hys., Pierre, BRIDGE, **Hughes Co.**—4,000 ft. Platte-Winner Bridge over Grand River near Wakapala, 200 ft. bridge over Oak Creek, near Oahe Reservoir, $2,225,000.

STREETS AND ROADS

▲ **ALABAMA**—State Hy. Dpt., Montgomery, Zone 4, ROAD,

Mobile Co.—4-lane U.S. Hy. 98 from Spanish Fort to Fairhope by-passing towns, between 10.11 and 11.72 mi. $2,342,000-$2,998,720.

▲ **N. Y., Mineola**—Dpt. P. Wks. Nassau Co., Old County Court House, Franklin Ave., Imprv. Roslyn-West Shore Dr., PAVING, CURBS, SIDEWALK, STORM WATER DRAINAGE and OVERPASSES, Port Washington. $3,000,000.

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, ROAD,

Mahoning and Portage Counties—16 mi. Interstate Rtes. 80 and 80-W (relocated Ohio Rte. 18) from Niles Interchange on Ohio Turnpike east to Rte. 46 in Manoning Co. and from Interchange west to 627 in Portage Co. $18,399,000. Beiswenger, Hock & Arnold, 1006 Grant St., Akron, consult. engrs.

▲ **PENNSYLVANIA**—State Hy. Comn., 506 North Office Bldg., Harrisburg, ROADS,

Clarion Co.—5.2 mi. sect. of Keystone Shortway, Interstate Rte. 80, bet. point 0.1 mi. east of Allegheny River, and point 0.1 mi. east of T. R. 338, RCC divided hy., $5,810,000, Buchart Engineering Co., York, consult. engr.

5.6 mi. sect. of Keystone Shortway, Interstate Rte. 80, bet. point 0.1 mi. east of T. R. 338 to 0.2 mi. east of Rte. 16033, RCC Divided hy., $7,590,000. Rummel, Klepper & Kahl, Park Place Office Bldg., Camp Hill, consult. engrs.

9.2 mi. sect. of Keystone Shortway, Interstate Rte. 80, RCC hy., divided bet. point 700 ft. east of Clarion River, and point near Corsica, $9,870,000, Green Engineering Co., Sewickley, consult. engrs. F. S. Poorman, c/o owner, engr. CD 7/23/58.

UNCLASSIFIED

▲ **Georgia**—Atlanta Gas Light Co., 1240 Caroline St. N.E., Atlanta, 149 mi. NATURAL GAS LINES, Chatham, Bryan, Liberty, Long and Wayne Counties. $5,000,000

▲ **B. C., North Vancouver**—City and Dist. of North Vancouver, City Hall, PUBLIC ICE ARENA, incl. ice rink, 85 x 200 ft., locker room, concession facilities, 1,000 seats, southeast corner Lonsdale Ave. and 25th St. $2,750,000.

PUBLIC BUILDINGS

▲ **Calif., Anaheim**—Anaheim High School Dist., 123 N. Citron St., plans by Smith, Powell & Morgridge, 208 W. 8 St., Los Angeles, 1 story, 130,000 sq. ft. concrete block Centralia HIGH SCHOOL. $2,500,000.

▲† **Calif. Camp Irwin**—U. S. Eng., 180 New Montgomery St., San Francisco, 200 unit MILITARY HOUSING. $3,300,000.

▲ **Calif., Fullerton**—State Div. Architecture, 1120 N St., Sacramento, MUSIC-SPEECH-DRAMA BLDG., Orange County State College. $4,500,000.

▲ **Calif., Los Angeles**—Bd. Educ., 1425 S. San Pedro St., plans by Zimmerman & Howell, 2439 Hyperion Ave., HARBOR COLLEGE ADDNS., administration bldg., business bldg., student center and store, planetarium, science bldg., Wilmington. $2,788,000. Bids April 1962. CD 2/23/60.

▲ **Calif., Los Angeles**—Bd. Educ., 1425 S. San Pedro St., plans by Allison & Rible, 500 S. Virgil Ave., CITY COLLEGE ADDN., Phase IV, incl. drama, speech and broadcasting, library addns., 885 N. Vermont. $2,600,000. CD 12/1/60.

▲ **Calif., Oakland**—City, City Hall, plans by Eero Saarinen Assocs. and Reynolds & Chamberlain, 3833 Piedmont Ave., MUSEUM COMPLEX, 11 and Oak Sts. $6,000,000. CD 5/25/59.

▲ **D. C., Wash.**—General Services Admin., 19th and F Sts. N. W. plans by Faulkner, Kingsbury & Stenhouse, 1710 H Sts. N. W., remodeling patent office bldg. for NATIONAL FINE ARTS and PORTRAIT GALLERY, Smithsonian Institute, 7th, 9th, F and G Sts. N. W., $5,000,000 (no appropriation).

▲† **D. C., Wash.**—General Services Admin., 19th and F Sts. N. W., plans by Faulkner, Kingsbury & Stenhouse, 1710 H St., N. W., remodeling Patent Office Bldg. for Smithsonian Institute, 7th, 9th F and G Sts. NW. $5,000,000 (no appropriation).

▲ **Fla., Tampa**—City, City Hall, plans by Norman F. Six, 214 E. Davis Blvd., Tampa and George L. Dahl, 2101 N. St. Paul St., Dallas, Tex. 125,000 sq. ft. CONVENTION HALL, 7,750 renting capacity, parking underneath, $3,000,000.

▲† **Ga., Fort Benning**—U. S. Eng., 200 East St. Julian St., Savannah, 300 units CAPE HART HOUSING. $4,950,000.

▲† **La., New Orleans**—General Service Admin., 19 and F Sts. N. W., Wash., D. C., plans by Claude Hooton, 336 Exchange Alley, New Orleans, La., conversion, remodeling old Post Office into FEDERAL COURT FACILITY. $3,300,000. Bids 1962. CD 8/11/61.

▲ **Mich., Birmingham**—Birmingham Bd. Educ., Chester Rd. voted $4,915,000 bonds Nov. 20, JUNIOR HIGH SCHOOL, ELEMENTARY SCHOOL, SCHOOLS ADDNS. and STORAGE BLDG. ADDN. CD 11/1/61.

▲ **Mich., St. Joseph**—Bd. Supervs. Berrien Co., Court House, plans by Shaw, Metz & Assocs., 208 S. La Salle, Chicago, Ill., COUNTY BLDG. $3,000,000.

▲ **N. J., Freehold**—Freehold Regional High School Dist., Broadway, referendum bonds and project Mar. 13, HIGH SCHOOL, Squankum Yellow Brook Rd., Howell Twp. $2,643,500. Midklewright & Mountford, East Stuyvesant, Trenton, archts. CD 6/21/61.

▲ **N. J., Paterson**—Housing Auth. of City of Paterson, 29 Harris Pl., plans by Kelly & Gruzen, 60 Park Pl., Newark, 400 unit HOUSING for ELDERLY, Proj. No. NJ 21-C 7. $4,000,000.

▲ **N. Y., Long Island City**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-435, PUBLIC SCHOOL 17, vicinity 30 Ave. and Crescent St., Queens Boro. $2,400,000. Site acquisition 1962.

▲ **N. Y., Woodhaven**—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-760 JUNIOR HIGH SCHOOL 210 (changed from P.S. 210) vicinity Woodhaven Blvd. and Atlantic Ave., Queens Boro. $3,500,000. Constr. after 1962. CD 1/10/61.

▲ **N. Y., Woodside**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-406, PUBLIC SCHOOL 229, vicinity 51 Ave. and 67 St., Queens Boro. $2,200,000. Site acquisition 1962.

▲ **N. Y., Yonkers**—Bd. Educ., 138 S. Broadway, plans by Howard C. Snyder, 101 Park Ave., New York, Zone 17, 2 and 4 story, 160,000 sq. ft. JUNIOR HIGH SCHOOL, incl. gymnasium, auditorium and cafeteria, Odell and Bolmer Aves. $2,600,000. Gustav B. Weiser, 111 Broadway, New York, Zone 6, elec. engr. Albert Fentzlaff, Inc., 111 Broadway, New York, Zone 6, mech. engr. Matthew Hiller, 207 E. 32 St., New York, Zone 16, struct. engr. Leo Novick, 150 E. 35 St., New York, Zone 16, site consult. engr. Bids March 1962.

▲ **Pa., Charleroi**—Charleroi Area Jt. School Dist., Proj. 1054, SECONDARY SCHOOL. $2,000,000.

▲ **Tenn., Johnson City**—City, City Hall, plans by The McPherson Co., engrs.-archts., 408 Main St., Greenville, S. C., mfg. PLANT. Over $2,000,000. American Hospital Supply Co., lessee.

▲ **Utah, Logan**—Cache County School Bd., Logan, voted $2,500,000 bonds Nov. 21, County HIGH SCHOOL, North and South HIGH SCHOOL REMODELING. CD 11/9/61.

▲ **Wash., Pullman**—Washington State University plans by Lea, Pearson & Richards, 240 S. Stadium Way, Tacoma, WOMENS DORMITORY. $2,500,000; plans by Kenneth W. Brooks, W 707 5th St., Spokane, DINING HALL. $1,800,000.

COMMERCIAL BUILDINGS

▲ **Ariz., Phoenix**—Diocese of Tucson, S. Stone Ave., Tucson, plans by John E. Stephens & Assocs., 3033 N. Central Ave., Gerrard HIGH SCHOOL, 44th St. and Oak, Bourgade High School, 31st Ave. and Hazelwood. $2,500,000.

▲ **Calif., Mountain View** — Inland Empire Developers, Inc., 1554 Saratoga Ave., Saratoga, 200 HOMES, 40 acre site between Stierlin Rd., Stevens Creek Freeway and Middlefield Rd. $3,000,000.

▲ **Calif., Palo Alto**—Stanford University, Palo Alto, plans by Campbell & Wong, 737 Beach St., San Francisco, 459-unit MARRIED STUDENT APARTMENT, Escondido Village. $5,000,000. Royston, Hanamoto & Mayes, 555 Clay St., San Francisco, landscape archts. Bids within two weeks. CD 1/13/61.

▲ **Colo., Englewood**—Gerri Von Frellick, 5801 W. 44th Ave., Lakewood, plans by James H. Johnson & Assocs., 7675 W. 14th Ave., Denver, 3 level 600,000 sq. ft. Cinderella SHOPPING CENTER, 5,900 car parking. $6,000,000. CD 6/12/61.

▲ **D. C., Wash.**—H. R. H. Constr. Corp., 579 5th Ave., New York 17, N. Y., plans by Satterlee & Smith, 3 Dupont Circle, 300 town houses, Area "B" S.W. Capitol Park Redevelopment Project, 3rd, 4th Sts., and Delaware Ave., $5,000,000-$6,000,000; APARTMENT Area "B" S.W. Redevelopment Project, at Eye St., 3rd and 4th and Deleware Ave., $4,000,000. Bids Spring 1962.

▲ **D. C., Wash.**—Harbour Square, Inc., 724 14th St. N.W., plans by Satterlee & Smith, 3 Dupont Circle, 450 cooperative APARTMENTS and ROW HOUSES, N, O and 4th Sts., fronting on Washington Channel, S.W. Redevelopment Project. $12,000,000. Bids Spring 1962.

▲ **Fla., Pensacola** — Owner, c/o H. C. Malchow & Assocs., archts., 1309 26th Ave. Gulfport, Miss., RETIREMENT HOME FOR AGED PERSONS, $2,500,000.

▲ **Mich., Detroit**—First Federal Savings & Loan Assoc., 751 Griswold St., plans by Smith, Hinchman & Grylls Assocs., Inc., archt.-engr., 3107 N. Grand Blvd., 22 story, twin tower, OFFICE. $10,000,000. CD 7/13/61.

▲ **Mich., Roseville**—Schostak Bros. & Sears Roebuck Co., 10711 Puritan Ave., Detroit, Zone 38, 2 story SHOPPING CENTER, 4,000-CAR PARKING, Gratiot Ave. and Masonic Blvd. $10,000,000. Constr. 1962.

▲ **N. J., Marlboro**—Marcrest of Monmouth, Inc., c/o DeLeo Agency, Plainfield Ave., Edison, GARDEN APARTMENTS for ELDERLY, Union Hill Rd. Overpass and Rte. 9. $7,000,000.

▲ **N. J., Passaic**—A. A. Rosen Co., 244 Madison Ave., New York, N. Y., 100,000 sq. ft. SHOPPING CENTER, Parker Ave., $2,000,000; APARTMENT for ELDERLY, Parker Ave., $2,000,000.

▲ **N. Y., Bayside**—Bayside Terminal Corp., 45 N. Station Plaza, Great Neck, 5 story, 98,890 sq. ft. APARTMENT, 2 story OFFICE, SHOPPING CENTER and parking area over Long Island R.R. tracks, Bell Blvd. and 41 Ave. $2,500,000. Sidney Rosen, 928 Middle Neck Rd., Great Neck, N. Y., consult. engr.

▲ **N. Y., Flushing**—Sunset Assocs., Inc., 110-20 71 Rd., Forest Hills, N. Y., plans by Oscar I. Silverstone, 37 W. 57 St., New York, Zone 19, three 6 story APARTMENTS, Kissena Blvd. and 73 Ave. $3,300,000.

▲ **N. Y., Jamaica**—General Builders Apt. Corp., 87-06 S. Conduit Ave., Howard Beach, plans by Benjamin Braunstein, 163-18 Jamaica Ave., five 6 story APARTMENTS, 85 St. and 151 Ave. $3,500,000.

▲ **N. Y., New York**—Columbia Broadcasting System, Inc., 485 Madison Ave., plans by Charles Luckman, 680 5 Ave., Zone 19, TV Network PRODUCTION CENTER, ADDN., W. 57, 10 and 11 Aves. $14,500,000. Seelye, Stevenson, Value & Knecht, 101 Park Ave., Zone 17, mech. engrs. Amman & Whitney, 111 8 Ave., Zone 11, struct. engrs. CD 11/10/61.

▲ **N. C., Charlotte**—William R. Barringer Hotel Corp., 426 N. Tryon St., Charlotte, 12 story APARTMENT, CONVENTION HALL. $2,500,000.

▲ **O., North Olmsted**—Buckeye Enterprises, Inc., 23203 Lorain Rd., plans by Andrew J. Burin, 21139 Lorain Rd., Cleveland, Zone 26, four COMMERCIAL BLDGS., four 24-suite APARTMENTS. $5,000,000. CD 6/14/60.

▲ **Tex., Dallas**—Owner, c/o Prinz & Brooks, archts., 4310 Westside Drive, 350 unit, masonry APARTMENT, N. Central expressway, north of Mockingbird Lane, $3,000,000.

▲ **Wash., Seattle**—Albert Lackman & Assocs., 2331 2nd Ave., plans by T. A. Smith, Lowman Bldg., 16 story, 100x230 ft., rein.-con. air conditioned APARTMENT, OFFICE, Broadway Ave. E. and E. Madison St. $5,500,000.

▲ **Wash., Seattle**—Marshall Field & Co., 25 E. Washington St., Chicago Ill., plans by John Graham & Co., 1426 5th Ave., 3 story, 150,000 sq. ft. air-conditioned Frederick & Nelson DEPARTMENT STORE, Auron Village SHOPPING CENTER, $3,000,000. CD 4/9/59, under Backus Improvement Co., as owner.

▲ **Wash., Seattle**—Maynard Hospital, University and Summit Sts., plans by Mandeville & Berge, Logan Bldg., 7 story, 40 x 76 ft. HOSPITAL ADDN. $3,000,000. CD 8/28/61.

▲ **Que., Montreal**—Bd. Governors, McGill University, Sherbrooke St. W., plans by Dobush, Stewart, Bourke, 5065 Western Ave., BIOLOGICAL SCIENCES BLDG. on campus, $4,500,000; plans by Affleck, Desbarats, Dimakopoulos, Lebensold, Michaud & Sise, 1010 St. Catherine St. W., HUMANITIES and SOCIAL SCIENCES BLDG., McTavish St., $2,400,000, CD 11/1/61; plans by Ross, Fish, Duchenes & Barrett, 4115 Sherbrooke St. W., ADMINISTRATION DEPARTMENTS ADDN. at University, $680,000; plans by Fleming & Smith, 1247 Guy St., Montreal, CHEMISTRY BLDG., $4,730,000.

INDUSTRIAL BUILDINGS

▲ **Ill., Marseilles**—National Phosphate Corp., Marseilles, PLANT and ADDITIONS to EXISTING STRUCTURE. Over $2,000,000.

▲ **Tex., Lone Star**—Lone Star Steel Co., Lone Star, EXTRUSION MILL, produce hi-test seamless pipe for oil industry, north of Marshall. $20,000,000. Bids first half 1962. CD 1/31/56.

▲ **Tex., San Antonio**—Wickes Corp., 515 N. Washington St., Saginaw, Mich., DISTRIBUTION CENTER, incl. sales and display, warehouse 532 ft. long lumber storage sheds, total 55,000 sq. ft., 23 acre site, Austin Hy., north of here. $2,500,000.

▲ **Wis., Kaukauna**—Thilmany Pulp & Paper Co., Thilmany Rd., 55,000 sq. ft. FACTORY. $4,000,000-$5,000,000. BA 1962.

PUERTO RICO

▲ **Puerto Rico, Bayamon**—Puerto Rico Urban Renewal & Housing Corp., P.O. Box 397, Rio Piedras, Proj. 5-3, 200 units, rein.-con. HOUSING. $2,000,000.

▲ **Puerto Rico, Catano** — Puerto Rico Urban Renewal & Housing Corp., P.O. Box 397, Rio Piedras, Proj. 5-2, 200 units, rein.-con HOUSING. $2,000,000.

▲ **Puerto Rico, Mayaguez**—Puerto Rico Urban Renewal & Housing Corp., P.O. Box 397, Rio Piedras, Proj. 4-11, 274 units, rein.-con. HOUSING. $2,500,000.

▲ **Puerto Rico, Ponce**—Puerto Rico Urban Renewal & Housing Corp., P.O. Box 397, Rio Piedras, Proj. 1-1F, 350 units, rein.-con. HOUSING. $3,500,000.

▲ **Puerto Rico, San Juan**—Puerto Rico Urban Renewal & Housing Corp., P.O. Box 397, Rio Piedras, 508 units, rein.-con. HOUSING. $5,000,000.

LATIN AMERICA

▲ **Trinidad, Pointe-A-Pierre**—Texaco, Inc., 135 E. 42 St., New York 17, N. Y., U.S.A., 2,700 bbl/day LUBRICATING OIL PLANT adjacent to existing refinery. $27,000,000.

FOREIGN

▲ **Afghanistan, Kabul**—Afghan Air Auth., Kabul, 2,000 meter RUNWAY, Badakhshan Airport. $8,000,000. Constr. 1962.

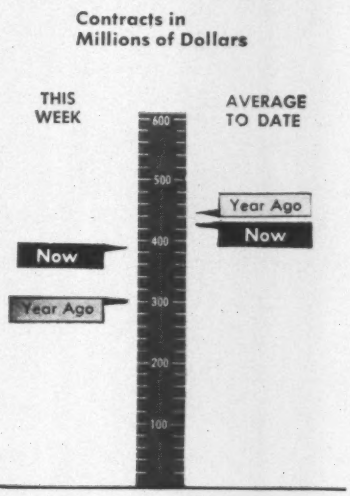
▲ **Itlay, Pavia**—ANIC, Azienda Nazionale Idrogenazione Combustibili, San Donato Milanese, 50 Via Tevere, Rome, OIL REFINERY. $48,300,000.

For additional reports see CONSTRUCTION DAILY NEWSLETTER

(Proposal Advertisements see pp. 76 to 78)

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

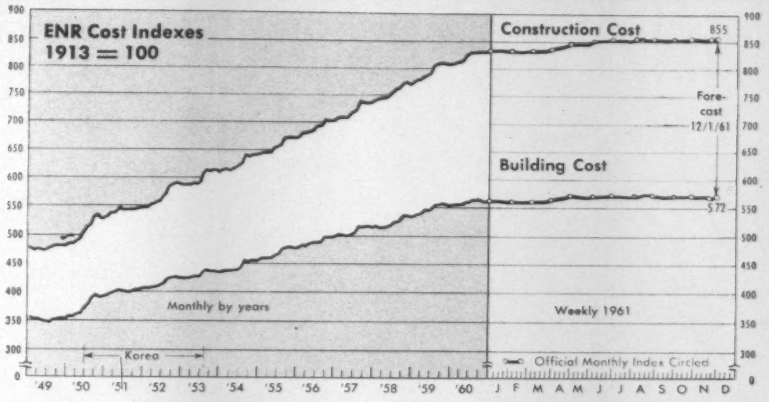
Contracts Awarded In 50 States By Type	This Week	Cum. 50 wks 1961	Chge '60-'61 %
	millions		
All Heavy Construction	$393.0	$21,339.6	− 3
By Ownership			
PRIVATE	206.0	10,621.9	− 8
PUBLIC	187.0	10,717.7	+ 1
State & Municipal	145.0	8,483.0	+ 6
Federal	42.0	2,234.7	− 3
By Type of Work			
PUBLIC			
Waterworks	21.0	411.5	− 8
Sewerage	16.7	789.5	+36
Bridges*	5.8	633.5	−17
Highways	54.8	3,586.7	+10
Earthwork, Dams & Waterways	22.3	790.2	+ 7
Buildings:			
Excl. Housing	34.9	2,534.5	+ 3
Housing	14.3	778.2	+14
Unclassified	17.2	1,194.9	−13
PRIVATE			
Buildings:			
Mass Housing	80.8	4,919.0	− 9
Commercial	47.4	2,519.3	+ 1
Industrial	61.9	2,745.0	+ 1
Unclassified	15.9	437.3	−56

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Dec. 7	Cum. 49 wks 1961	Chge '60-'61 %
	millions		
Corporate Securities	$ 21.8	$3,362.6	− 4
State and Municipal:			
All Except Housing	144.1	6,524.2	+ 9
Housing	0	126.6	−41
Federal Loans	0.4	229.8	+31
Federal Aid	0	3,535.7	+10
Total Nonfederal	$166.3	$13,778.8	+ 5
Federal Appropriations:			
Projects in U. S.	0	3,448.1	+ 9
Outside U. S.	0	145.4	− 9
Total New Capital	$166.3	$17,372.3	+ 6



ENR INDEXES (1913=100), 20-cities' average	Week of Dec. 7 1961	% Change from Nov. 9 1961	% Change from Dec. 8 1960
Construction Cost	855.19	−0.05	+3.0
Building Cost	570.68	−0.06	+1.7

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

ENR COST INDEXES IN 22 CITIES, 1913=100

City	Construction Cost Dec. 1961	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Dec. 1961	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	649.94	+3.3	−0.5	506.37	+0.4	+0.5
Baltimore	747.48	0	−0.8	555.16	0	−0.7
Birmingham	698.72	−0.2	+3.6	539.66	−0.3	+2.6
Boston	885.68	0	+4.4	594.92	0	+4.0
Chicago	946.20	0	+3.9	593.64	0	+1.3
Cincinnati	865.28	+0.06	+3.2	554.13	+0.09	+1.8
Cleveland	973.94	−0.2	+3.1	571.35	−0.2	+1.7
Dallas	659.60	0	+3.0	530.33	0	+1.0
Denver	776.87	0	+2.7	560.43	0	+1.5
Detroit	983.42	0	+2.1	613.69	0	+1.4
Kansas City	829.72	−1.0	+2.1	553.82	−1.5	+0.1
Los Angeles	939.85	0	+4.4	579.18	0	+3.2
Minneapolis	912.84	0	+3.2	586.65	0	+1.9
New Orleans	668.85	−0.4	+3.0	516.86	−0.5	+1.8
New York	1,071.32	0	+3.6	663.66	0	+3.1
Philadelphia	842.98	−0.4	+1.5	587.95	−0.6	−0.4
Pittsburgh	921.54	+0.5	+4.1	639.68	+0.9	+2.2
St. Louis	933.25	+0.2	+3.6	583.04	+0.3	+1.1
San Francisco	910.46	0	+3.9	564.25	0	+1.9
Seattle	887.25	0	+4.0	518.77	0	+3.0
U. S.—20 Cities' avg.	**855.19**	**−0.1**	**+3.0**	**570.68**	**−0.1**	**+1.7**
Montreal	660.99	0	+1.9	463.51	0	−0.3
Toronto	701.17	0	+1.6	500.14	+0.5	+1.6

CONTRACTS AWARDED

	1961 Nov. (millions)	1961 11-Mos. (millions)	Percent Change from 1960† Nov.	Percent Change from 1960† 11-Mos.
Total U. S. (ENR reported)	$2,071	$20,630	− 7	− 3
Private	1,091	10,227	− 1	−10
Public	980	10,403	−12	+ 5
State and Municipal	838	8,231	+0.5	+ 7
Federal	142	2,172	−50	− 2
ENR Volume Index, 1913=100	552	573	− 9	− 4

NEW CONSTRUCTION CAPITAL

Total U. S.	1,352	17,206	+40	+ 4
State and Municipal Bond Sales	810	6,507	+46	+ 5
Corporate Security Sales	341	3,341	−14	− 5
Federal Loans, Aid (nonfederal work)	27	3,765	+99	+ 8
Federal Appropriations, *(federal work)	173	3,593	....	+ 6

* Includes funds for outside U. S.
† Based on average week: 5 weeks in November 1961, 4 weeks in November 1960; 48 weeks in first eleven months of 1961, 47 weeks in 1960.

This boulevard says STEEL in a big way

USS MAN-TEN High Strength Steel combined with A7 carbon steel cuts weight and reduces costs

Pittsburgh's new Crosstown Boulevard begins at one of the busiest spots in town—the elevated intersection of the Boulevard of the Allies and the approach to the Liberty Bridge. It crosses over two railroad spurs and two heavily traveled thoroughfares before reaching grade near the sports arena.

Here is another case where the use of USS MAN-TEN (A440) High Strength Steel combined with A7 carbon steel resulted in substantial economies and less weight.

The designers and engineers, Richardson, Gordon and Associates, had already used USS MAN-TEN (A440) Steel in the Penn-Lincoln Parkway to reduce weight of members by 23% to 29%. Costs went down, too, because USS MAN-TEN (A440) Steel is cheaper than structural carbon steel when weight reduction is 17% or more. MAN-TEN Steel's high yield point of 50,000 psi permits designing to permissible allowable stresses of 24,000 compared to 18,000 psi for A7 steel.

The Crosstown Boulevard is a good example of how you can combine A7 steel with USS MAN-TEN (A440) structural shapes and built-up sections for economical short-span bridge construction. In all, 1,554 tons of USS MAN-TEN High Strength Steel were used on this project and consisted of 36″ WF beams, angles and plates. The riveted built-up sections shown were fabricated from USS MAN-TEN Steel plates and angles. Webs are 54½″ deep.

United States Steel also makes A36 (36,000 psi, minimum yield) structural carbon steel, USS COR-TEN and USS TRI-TEN Brands High Strength Steel (50,000 psi minimum yield point), and USS "T-1" Constructional Alloy Steel (100,000 psi minimum yield strength). For more information, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania. USS, MAN-TEN, COR-TEN, TRI-TEN and "T-1" are registered trademarks.

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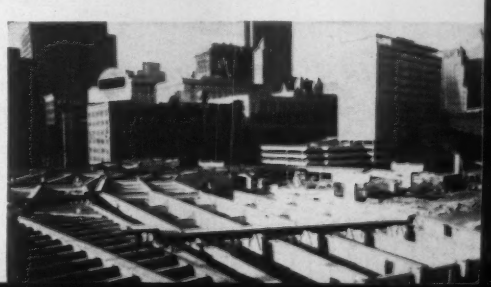
USS United States Steel

Greater strength—more clearance. USS MAN-TEN Brand High Strength Steel, as one member of the USS "family of steels," reduced weight and cost in these structural shapes and built-up girders.

Pittsburgh Crosstown Boulevard
—Owner: Pennsylvania Department of Highways, Harrisburg, Pennsylvania. Designer: Richardson, Gordon and Associates, Pittsburgh, Pennsylvania. Superstructure General Contractor: Pittsburgh Bridge & Iron Works, Pittsburgh, Pennsylvania. Substructure General Contractor: Sanctis Construction, Inc., Pittsburgh, Pennsylvania.



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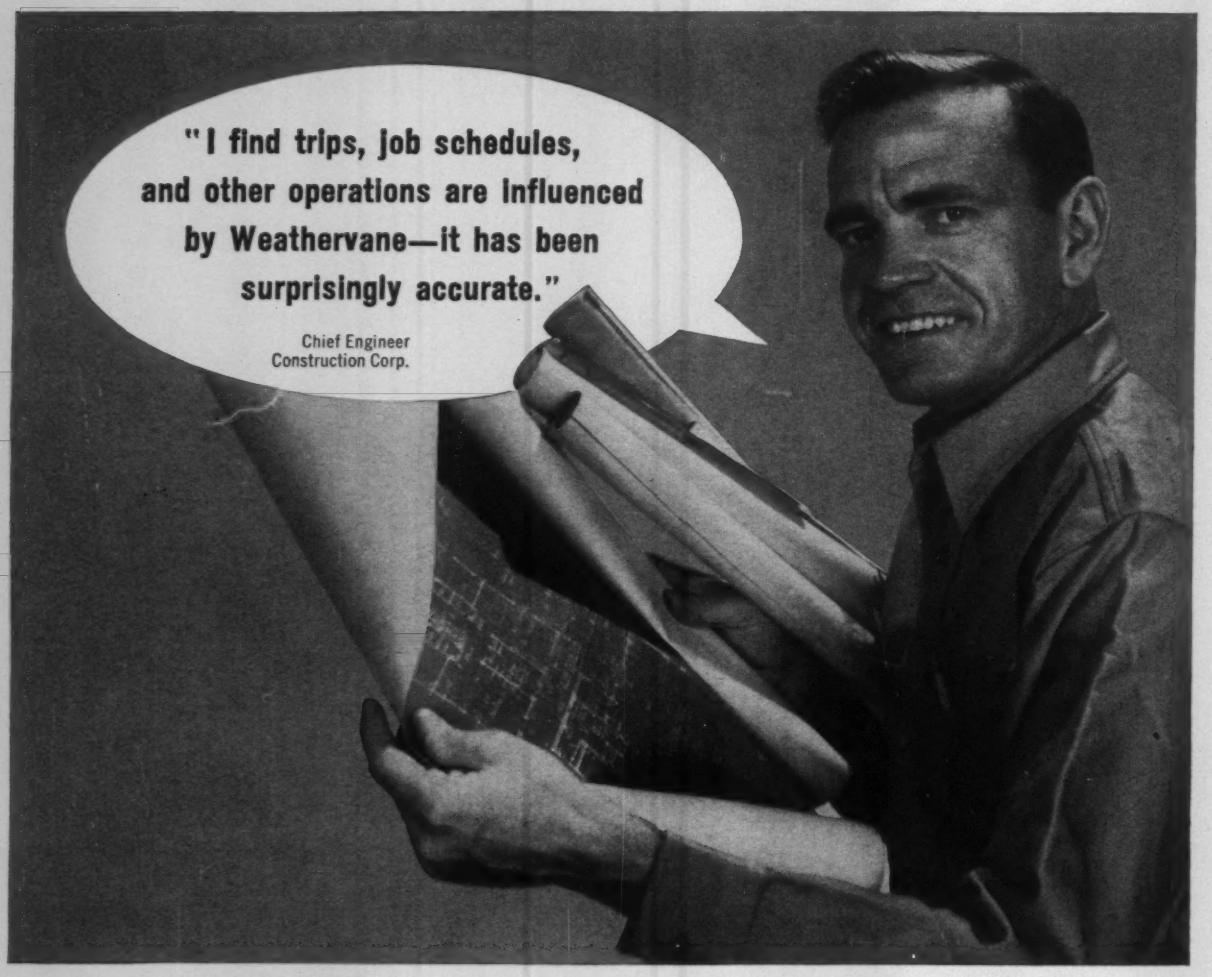
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Industry's Capital Outlays Rising

Plant and equipment expenditures of U.S. businesses will keep on rising through the first quarter of next year, according to the latest government survey.

Outlays for new plant and equipment are expected to reach a seasonally adjusted annual rate of $36.5 billion during the first quarter of 1962. This would return such spending to the level of the second quarter of 1960 and shove outlays 6% above expenditures estimated for the calendar year 1961.

Expenditures for plant and equipment for the fourth quarter of this year are expected to hit an annual rate of $35.9 billion, compared to an actual expenditure rate of $34.7 billion in the third quarter of 1961.

The government forecast of capital spending plans is a much more limited look into the future than the survey made by the McGraw-Hill Economics Department. Last month it reported that manufacturing companies planned to boost their capital investment spending by 7% next year, and that all U.S. business would increase its capital investment by 4% (ENR Nov. 9, p. 23).

The Department of Commerce and Securities and Exchange Commission report limits itself to the first quarter of 1962. And what it shows is that the upward trend of capital spending is leveling off, at least temporarily.

Capital spending plans of most major industries show an increase from the fourth quarter levels to the first quarter, including both durable and nondurable goods manufacturers, and railroads and commercial firms. Staying about level with the fourth quarter spending levels are mining companies. Declines are expected in transportation other than rail, and public utilities.

Although the government's survey, taken in late October and November, shows a rise for capital expenditures into the first quarter, it's a smaller rise than those registered quarter by quarter since the trough of the capital spending cycle was hit in the second quarter of 1961. Seasonally adjusted, the third quarter of 1961 rose 3.5% over the second quarter and the fourth quarter is expected to rise the same amount over the third quarter. But the spending level anticipated for the first quarter of next year shows only a 1.5% rise over the fourth quarter of 1961.

The McGraw-Hill survey, conducted in October, reported that business expects to spend $35.8 billion in 1962, compared with an estimated $34.5 billion during 1961. Manufacturing companies, which account for about 40% of all capital equipment, told McGraw-Hill they plan 1962 spending of $14.6 billion, compared with $13.7 billion this year.

The new government survey reports that all major industries except nonrail transportation companies and public utilities expect spending in the first quarter of next year to be at a seasonally adjusted annual rate above the full-year 1961 level, with commercial companies showing a larger-than-average increase.

Manufacturing outlays during the first quarter of next year will be at a rate about 8% above the recession low hit during the second quarter of 1961. Nondurable goods companies show a steady rise in investment throughout 1961 and the first quarter of 1962. All major industries except paper expect to contribute to the advance.

Commerce officials note that the upward trend of capital spending during this cycle appears more gradual than in other post-World War II recoveries.

Commerce officials think that one reason for the tapering off of the rate of increase in the first quarter next year is that companies have not yet had their 1962 budget meetings—the estimates given merely being extrapolations of 1961 programs.

The Treasury is promising a new Bulletin F table of useful lives for major productive equipment by next spring. Then there is the Treasury's tax credit proposal, which, if enacted by Congress next year, would give a tax cut to all companies based on their spending for new equipment. Spending on buildings would not be credited under the draft version of the bill now under discussion, but there's pressure to make such spending eligible for the same credit.

ENR figures, however, strongly suggest that other factors are contributing to the slower rise in the spending rate: Industrial building contracts in 1961 barely top last year; pipeline awards show a sharp drop; commercial building so far scores only a slight gain over last year.

These reasons would hold spending down even though equipment buying rose. Construction contracts next year should show a big rise, which would kick the spending rate higher around the middle of next year.

Industry's Spending—Past and Planned

(Billions of Dollars)

	1959*	1960*	1961†	1st Qtr. 1962‡
All Business	32.54	35.68	34.50	36.50
All Manufacturing	12.07	14.48	13.72	14.55
Durable Goods	5.77	7.18	6.27	6.70
Iron and Steel	1.04	1.60	1.15	1.30
Nonferrous Metal	.31	.31	.26	.25
Electrical Machinery	.52	.68	.70	.70
Machinery, Except Electrical	.91	1.10	1.09	1.20
Motor Vehicles and Parts	.64	.89	.74	.75
Transportation Equipment	.39	.42	.39	.40
Nondurable Goods	6.29	7.30	7.45	7.85
Food and Beverage	.83	.92	.97	1.00
Textile	.41	.53	.51	.55
Paper	.63	.75	.68	.70
Chemical	1.23	1.60	1.62	1.70
Petroleum and Coal	2.49	2.64	2.79	2.80
MINING	.99	.99	.99	1.00
RAILROAD	.92	1.03	.67	.70
TRANSPORTATION, (Except Rail)	2.02	1.94	1.84	1.80
PUBLIC UTILITIES	5.67	5.68	5.56	5.50
COMMUNICATION, COMMERCIAL AND OTHER	10.88	11.57	11.71	12.90

* Actual.

† Estimates for full year based on reports by business in late October and November.

‡ Seasonally adjusted annual rate.

Source: SEC-Commerce.

AFL-CIO Chiefs Plead Need for Labor

- **Federation officials try to avert an internal explosion by stressing their external problems.**
- **Action taken this week on craft-industrial union dispute will determine effectiveness of strategy.**

President John F. Kennedy set the tone last week for the AFL-CIO's pre-convention strategy of trying to sell the need for labor unity.

Appearing as the Federation's guest at its fourth national convention, which winds up at the Americana Hotel in Miami Beach, Fla., this week, Mr. Kennedy warned that "what unites labor, what unites this country, is far more important than those things on which we may disagree."

Following this line of approach to the internal disputes that have threatened to wreck the labor merger, the AFL-CIO's top strategists spent most of last week trying to scare convention officials and delegates into negotiating rather than fighting over their differences. Embraced in the fuming issues are craft-industrial union jurisdiction, civil rights, organizing stalemates and even personality animosities.

The question of whether the strategy would work was one that could be answered either way on Monday, as the convention moved into its second and final week.

AFL-CIO President George Meany led the drive to rally the convention behind a common enemy. His basic message was that the AFL-CIO is losing steam at a time when a strong and united labor movement is essential to defeat anti-labor forces on both the economic and legislative fronts.

In his report to the convention, Mr. Meany made no bones about the fact that the AFL-CIO has barely held its own numerically and now represents "a smaller proportion of the total working population than it did in 1955. The Federation's present membership of 12,305,000 is only 182,00 more than the total 1955 membership of its present affiliates. Union members now constitute only 32% of the labor force, as compared to 36% in 1945.

The reason for this slippage, Mr. Meany said, is that the AFL-CIO unions have not faced up to their "number one" job of organizing the unorganized. He confessed that little progress has been made in the South (where the plumbers union, for example just lost a big campaign to organize Daniel Construction Co.). And he said the challenge of organizing has been vastly multiplied by the shift from blue collar to white collar work and by the continuing disinterest of white collar workers in unionism.

Part of the problem, delegates heard from Mr. Meany and others, is that repressive legislation has hampered union activities and growth. The Taft-Hartley and Landrum-Griffin laws were described as oppressive and the threat of anti-trust legislation and of legislation to outlaw strikes at defense plants and installations was called real. Much of the

At AFL-CIO's Miami Meeting . . .

• **Discrimination**—Assistant Secretary of Labor L. R. Holleman said the President's Committee on Equal Employment Opportunity means business and will cancel government contracts of contractors who deliberately avoid the spirit and the letter of the President's Executive Order against racial discrimination. Mr. Holleman is executive vice president of the Committee.

• **Industry cooperation**—Calling for a higher degree of cooperation among all segments of the construction industry, Paul M. Geary, director of the National Association of Electrical Contractors said the industry is suffering from lack of leadership, form or cohesion. He urged contractor associations to act in their own self-interest rather than follow the often "ridiculous" line of the Chamber of Commerce or National Association of Manufacturers.

• **Outside influences**—Edward T. Kelly, labor relations manager of the Associated General Contractors, warned that farsighted and constructive management-labor teamwork is essential to preserve the construction industry "as an industry to be guided and controlled by" construction people. He said the government needs little provocation under the "emergency conditions" that exist today to intervene in the industry's affairs.

• **Apprenticeship**—The number of registered apprentices in the construction industry is still slipping. It dropped from 102,839 on July 1, 1960 to 99,856 on June 30, 1961, according to Edward E. Goshen, director of the U. S. Bureau of Apprenticeship and Training. Mr. Goshen called for a "united effort" to improve and expand apprenticeship training.

• **Missile site disputes**—Commending the building trades for the effectiveness of their no-strike pledge, Labor Secretary Arthur Goldberg said that out of a quarter million man-days worked at missile sites in the last six months, only 4,000 man-days were lost because of labor disputes. "This means," he said, "there was a loss time ratio of fifty-five thousandths of one percent."

• **Project agreements**—Rejecting criticism of department-negotiated project agreements, delegates to the 51st convention of the AFL-CIO Building and Construction Trades Department went on record as favoring "project agreements in any instance where (they) will result in work opportunities for union construction workers and union contractors which otherwise would be lost to nonunion contractors and lost to nonunion workmen."

Unity

blame was placed on the "one-sided" McClellan committee investigations and on the anti-labor campaigns of employer groups.

The convention delegates were warned that labor unions also face what building trades President C. J. Haggerty called an economic straitjacket. Although the Administration talked last week in terms of labor's responsibility in price stability, and in terms of "plenty of room" for wage increases within the framework of productivity increases, the union feeling was that even the Administration is threatening to remove "freedom" from collective bargaining.

It is against this general background of stagnation and external dangers that union officials, in private caucuses and committee sessions off the convention floor, have tried to take some of the steam out of their internal quarrels.

What they succeeded in doing, in some measure, was to whittle down the harsh industrial union protest against the building trades. And Mr. Meany, for his part, dampened civil rights protests, directed mainly at the construction unions, by softening his stand against the Nego American Labor Congress headed by the AFL-CIO's only Negro vice president, A. Philip Randolph.

Actually, as the convention resumed on Monday, the jurisdictional conflict between the building trades and industrial unions still existed. But despite the fact that it was accentuated by personality differences between Mr. Meany and industrial union leader Walter Reuther, there appeared to be grounds for a compromise.

A special committee headed by machinist union President Al J. Hayes unanimously advanced a proposed solution for handling job rivalries between the two union groups. Under that proposal, disputes would be referred to an umpire selected by the AFL-CIO. Noncompliance with the umpire's decisions would be referred to the Executive Council of the Federation. The Council could then invoke appropriate sanctions against those unions that were found guilty of non-compliance.

Although the plan lacks the finality demanded by the industrial unions and involves the use of outsiders to which the building trades object (ENR Dec. 7, p. 77), it appeared over the weekend to afford a framework for eventual agreement.

NLRB Weakens Reuther's Hand

The National Labor Relations Board has put AFL-CIO Vice President Walter Reuther in the position of playing a losing game in one phase of the internal disputes problem now before the big AFL-CIO convention in Miami Beach, Fla.

In a key case in the bitter feud between the building trades and industrial unions, the Board last week certified the sheet metal workers union (one of the building trades) as bargaining representative for production and maintenance workers at the Syracuse, N. Y., plant of Carrier Corp., manufacturer of air conditioning, refrigeration and industrial heating equipment. The steelworkers union, which belongs to Mr. Reuther's Industrial Union Department (IUD), formerly held the representation rights. The NLRB action tended to make a "dead duck" out of an IUD demand for the ouster of the sheet metal workers from the AFL-CIO.

The dispute dramatically illustrates the Federation's big problem of how to solve its internal disputes and of how to enforce any jurisdictional decisions it does make.

The Board certification followed a November 21-22 representation election in which Carrier workers rejected the steelworkers union as their representative and voted for the sheet metal workers 1,721 to 864.

The IUD has taken the position that the sheet metal workers illegally raided the jurisdiction of the steelworkers in defiance of an AFL-CIO mandate. It is on that ground that the IUD asked the AFL-CIO to expel the union.

The dispute goes back to January 7, when the steelworkers beat the sheet metal workers in a Carrier election by a slim majority of 13 votes out of 3,035 ballots cast. The steelworkers struck shortly afterwards but never consolidated their position and never obtained a labor contract.

On March 9, the sheet metal workers moved back in with a petition for another election. The petition survived a storm of litigation that culminated in the November election.

In the meantime, the AFL-CIO Executive Council, siding with the steelworkers, unanimously accused the sheet metal workers of violating the Federation's no-raiding provisions. It ordered them to withdraw the petition.

The order was ignored. Now, the sheet metal workers union, which gained the full support of the Building Trades and Metal Trades departments on the eve of the convention, can claim to be in the right.

Holland Report Vexes Industry

The criteria that have been proposed for application of prevailing wages under the Davis-Bacon Act to missile site work were roundly condemned last week by another labor-management group in the construction industry.

Meeting in conjunction with the AFL-CIO conventions at Miami Beach, Fla., the Joint Industry Program Committee (JIPC) unanimously urged rejection of the criteria as "unrealistic," "arbitrary," and contrary to both the public interest and the national defense effort.

The criteria are contained in what is known as the "Holland Report" (ENR Oct. 26, p. 87). The report, prepared for the U. S. Labor Department by the Public Contracts Advisory Committee in August, suggests, in general, that the Davis-Bacon Act should be applied only to "brick and mortar" work at missile sites.

In condemning the report, JIPC took the position that the Committee members were not neutrals and reflected their personal "preferences and predilections" toward the manufacturing industry as opposed to the construction industry. It said the Committee was completely unjustified in its refusal to apply the "past practice" test to initial installation of mechanical and electrical equipment, which JIPC claims is historically construction work.

JIPC embraces the international plumbers union and a number of prominent national employer associations that are seeking to promote and improve the plumbing and pipefitting industry.

Its criticism of the Holland Report voices the general sentiment of construction industry members, both union and employer.

The Holland Report is still before Labor Secretary Arthur Goldberg for acceptance or rejection. Mr. Goldberg has assured the industry that he will take no action on the report until all critics have been heard. JIPC has asked for such a hearing and has forwarded its statement of criticism to Mr. Goldberg.

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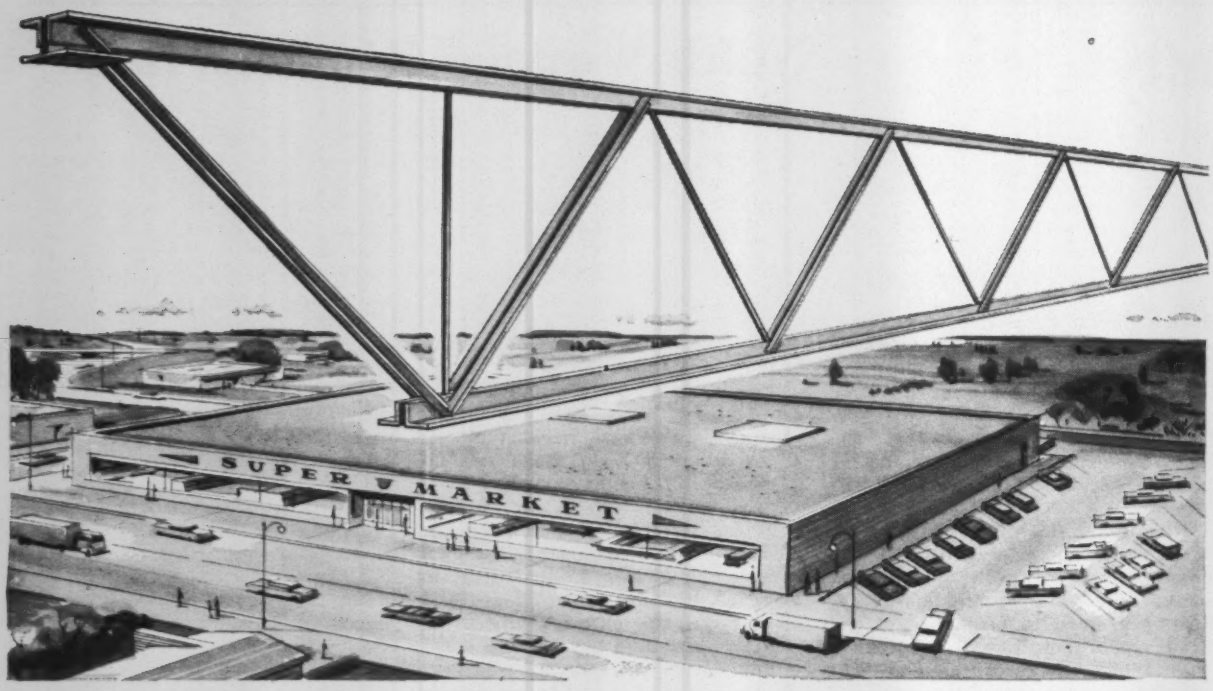

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Lien Law Is Strictly Interpreted

As a general rule, a subcontractor's lien is limited to the amount remaining unpaid to the prime contractor. In most states, local statutes provide that before the prime contractor shall be entitled to be paid for work done, he must submit a statement to the effect that all bills for labor and material have been paid. Where the owner makes payment to the prime contractor without getting such a statement, the owner cannot offset the amounts so paid in an action brought by a subcontractor to foreclose a mechanic's lien.

This rule of law was illustrated in a recent Ohio case, where the following facts were involved:

John G. Fleming, the owner of a residence in Cincinnati, Ohio, entered into a contract with Ed. A. McCarthy & Sons, Inc., whereby the contractor was to transform this residence into an office building, for the agreed price of $26,478, to which should be added the cost of certain work not included in the original agreement.

In January, 1957, Fleming paid the contractor $10,000 on account of his obligation under the contract, and in February, 1957, made another payment of $10,000, without in any way complying with the mechanic's lien law which provides that before a contractor shall be entitled to payment, he must submit to the owner a sworn statement, "showing the name of every laborer in his employ who has not been paid in full and also showing the name of every subcontractor in his employ, and of every person furnishing machinery, material, or fuel, and giving the amount which is due or to become due to them, or any of them, for work done, or machinery, material, or fuel furnished to him, which statement shall be accompanied by a certificate signed by every person furnishing machinery, material, or fuel to him."

Shortly after the two payments were made, a dispute arose between the owner and the contractor as to whether the work had been substantially performed and this dispute resulted in the contractor bringing an action against the owner to recover $10,068.22, the balance allegedly due under the contract, and for the foreclosure of a mechanic's lien upon the property. Various subcontractors and material suppliers were made parties including Fast & Company. Fast filed an answer and cross-petition in which it alleged that it had done the painting required in the contract between McCarthy and Fleming and was due $1,939.20, and it had perfected a mechanic's lien on the premises. It prayed for judgment against the contractor and for foreclosure of the mechanic's lien. The owner also counterclaimed for breach of contract.

The trial court found in favor of Fast and entered judgment in the sum of $1,939.20, with interest as prayed for, and against Fleming, the owner, in favor of Fast finding that its lien was valid and granted foreclosure. The court also found in favor of the owner in its counterclaim against the contractor in the sum of $4,670.64. Judgment was given in favor of four subcontractors, including Fast, for the total amount of $3,704.84. The owner appealed the judgment favoring the subcontractors.

The principal point raised on the appeal was that at the time the two payments of $10,000 were made to the contractor, Fast & Company had not performed any work and had not been damaged by the making of the part payments. As to this contention, the appellate court[1] called attention to the fact that the statute provided for a statement not only of the money due but also of money to become due.

The appellate court stated: "A reading of this section is sufficient to disclose that when a principal contractor desires to draw money from the owner, he must, in order to comply with this section, certify not only the names of those who have actually performed work and to whom money was due at the time, but also the names of all persons with whom he has contracts to perform work in the future and to whom money would become due."

The court stated that payments made to the general contractor without compliance with the mechanic's lien law must be disregarded when considering the rights of subcontractors. The appellate court pointed out, that since the owner obtained a judgment in the amount of $4,670.64 in its counterclaim against the prime contract and since the total judgments in favor of subcontractors amounted to only $3,704.84, there still remained subject to subcontractor's liens more than enough to satisfy them in full.

(1) Ed. A. McCarthy & Sons, Inc. v. Fleming, 170 N.E. 2d 269, Court of Appeals of Ohio, October 13, 1960.

Delaying Party Denied Damages

A person is not entitled to damages for delayed performance if he is the one who has caused the delay.

The rule is illustrated by a Maryland case involving an agreement to purchase land on which a filling station was to be erected. The seller agreed to obtain a permit for construction of the station.

When the purchaser sued the seller for delayed performance, the court found as a fact that the delay in getting the permit was caused by the purchaser and denied him recovery. The decision was affirmed on appeal.[1]

The appellate court stated: "It is a fundamental principle of the law of contracts that delay in the performance of a contract will be excused whenever such delay is caused by the party objecting to the delay. 17 C.J.S. Contracts, Section 505; 12 Am. Jur., Contracts, Section 351; 3 Williston, Contracts (Rev. ed.), Section 677; 6 Corbin, Contracts, Section 1264. The cases in this and other jurisdictions support the texts. See, for example, Iron Clad Mfg. Co. v. Stanfield, 1910, 112 Md. 360, 76 A. 854 (the delay was the fault of the owner and was not a breach by the builder); Alois v. Waldman, 1959, 219 Md. 369, 149 A 2d 406 (when a duty is owed, the party owing it cannot prevail if the failure to perform operates to hinder or prevent performance). See also, Adolphson v. Hixon, 1943, 215 Minn. 252, 9 N.W. 2d 719; Giffels & Vallet, Inc. v. Edw. C. Levy Co., 1953, 337 Mich. 177, 58 N.W. 2d 899; Melwin Constr. Co. v. Stonewall Construction Co., D.C. Mun. App. 1955, 113 A. 2d 108."

(1) Schneider v. Saul, 168 A. 2d 375, Court of Appeals of Maryland.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by Central Book Company, Brooklyn, N. Y.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; Legal Cases for Contractors, Architects and Engineers;* and *Law for Contractors, Architects and Engineers.*

Workers and Materialmen Held Priority Claims

Contract provisions calling for a retained percentage of the contract price pending satisfaction of all liens give suppliers of labor and material prior rights to the amount retained. The rights are superior to those of assignee's of the contractor and to those of the government for unpaid taxes.

In a federal case that arose in Oklahoma, for example, the Southwestern Bell Telephone Company contracted with R. J. Sims for certain construction work. Upon completion of the work, Sims left unpaid bills in the amount of $20,151.75 for labor and materials.

The contractor had obtained loans from McAlester Finance Corporation and had assigned all money due him under the contract to the finance company to secure the payment of the loans.

The government filed claims for unpaid withholding and excise taxes. The unpaid retainage, which amounted to 10% of the contract price, was deposited in court subject to a determination as to who had a preference to it.

The contract provided that: "The Telephone Company shall have the right to require satisfactory proof of payment, by the contractor, of all labor and material furnished under this contract, before acceptance of the work, but no action or non-action of the Telephone Company in requiring such proofs shall relieve the contractor of the duty of causing any and all liens arising out of the contract to be fully satisfied and discharged."

The trial court held that a retained percentage of funds due under a construction contract, which was not payable to the contractor-taxpayer until labor and material claims were satisfied, was not property subject to a federal tax lien.

An assignee for security of construction contracts was a purchaser whose rights were not affected by tax liens.

The payment for labor and materials and the amount due the assignee exhausted the deposited sum and left nothing for the United States.

The United States appealed. The appellate court[1] approved the decision giving the supplier of labor and materials first priority. But it held that under the Internal Revenue Code, the government's tax lien took precedence over the claim of the finance company.

(1) United States v. Chapman 251 F. 2d 862, U.S. Court of Appeals, Tenth Circuit, July 29, 1960.

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Bids: January 16, 1962

Philadelphia, Penna. Procurement Department Water Department

Sealed bids will be received in Room 313, City Hall Annex, until 2.30 P.M., Eastern Standard Time, on Tuesday, January 16, 1962, and opened at that time for:

BID NUMBER 2897—WORK NUMBER SD-273-SW—Construction of Intercepting Sewer in 26th Street from Right of Way (Formerly Shunk Street) to Penrose Avenue (Lower Schuylkill East Side Intercepting System).

PRINCIPAL ITEMS OF WORK

Excavation in Tunnel	4,920 cubic yards
Excavation—open cut—shafts, manholes	1,100 cubic yards
Excavation—open cut—sewer pipe	2,450 cubic yards
Vacuum Processing in Tunnel	16,335 square feet
4 feet Diameter Concrete Sewer in Tunnel	4,680 lin. feet
3 feet Diameter Concrete Sewer on concrete base	699 lin. feet
Manholes	12
Paving	125 square yards

Proposal forms, questionnaires and specications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 7, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, Room 1113, City Hall Annex, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

Bids: January 9, 1962

Power Authority of the State of New York Niagara Power Project

ADVERTISEMENT FOR PROPOSALS FOR THE CONSTRUCTION OF SCHOELLKOPF INTERCHANGE AND DEMOLITION WORK FOR INCIDENTAL NIAGARA POWER FACILITIES IN NIAGARA FALLS, NIAGARA COUNTY, NEW YORK SPECIFICATION NO. PA-N-23057 NIAGARA CONTRACT NO. N 48

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the Construction of the Schoellkopf Interchange and Demolition Work for Incidental Niagara Power Facilities in Niagara Falls, Niagara County, New York, until 10:30 A.M. Eastern Standard Time on the 9th day of January 1962, at the Authority's Office, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are:

Estimated:

280,000 cu. yds.	Excavation, unclassified, various types
550 cu. yds.	Crushed rock for filter blanket
1,300 cu. yds.	Impervious blanket
2,800 lin. ft.	Vitrified clay pipe underdrain, 4" dia.
2,820 lin. ft.	Reinforced concrete pipe, 12" dia. to 30" dia
7,200 cu. yds.	Foundation course crushed rock
5,390 cu. yds.	Concrete, various structures
11,500 lin. ft.	Concrete curbs, various kinds
250,000 pounds	Reinforcement bars
2,500 lin. ft.	Granite curb
1,400 tons	Stone filled sheet asphalt
20 acres	Topsoil and Seeding

The length of the ramps of the interchange to be constructed under this contract is approximately 1.1 miles.

In addition, two bridges, a residence, two adjacent buildings and approximately ten structures consisting of buildings, bridge and silos shall be demolished and/or salvaged at the Schoellkopf Power Plant headworks. There are not less than 1325 tons of structural steel in these structures.

It is anticipated that demolition and/or salvage of the lower works and additional buildings at the headworks of the Schoellkopf Power Plant will be included in this contract by an addendum to be issued during the bidding period. During the bidding period, the Power Authority will advise prospective bidders with regard to the names of those parties which have expressed interest in purchasing equipment and materials to be removed from the Schoellkopf Power Plant.

The work shall be completed on or before November 1, 1962.

Plans, Specifications and Proposal Forms for the work may be obtained on or about November 28, 1961, from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: January 10, 1962

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:
Until 11 A.M. Wednesday, January 10, 1962.

For Narrows Bridge Contract No. NB-12, Brooklyn Approach, Brooklyn, New York City.

Each bid must be accompanied by a deposit in the amount of $250,000.00.

The contract includes grading, drainage, concrete piers, retaining walls and abutments, seawall, steel viaducts and bridges and paving.

Plans, specifications and contract documents may be purchased at the office of the Authority for $130.00, which will not be refunded.

OFFICIAL PROPOSALS

Bids: December 21, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y., Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 21st day of December 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. FULLER, District Engineer, 353 Broadway, Albany, New York						
Albany (Int. Trg. Rte. 787)	FIC 61-22 FAC 61-23	Interstate Rte. Conn. 540 (Albany-Route 9W to Green St.–Cont. 2) City of Albany: Southside Route Arterial Highway Proj. EI-787-3(49), U-1132(3)	1.34 (3.05 Acc.)	9" Cem. Conc. Pavt., 2 @ 37° Var. = 3.51 Mi. Asph. Conc. = 0.48; Misc. Work = 0.40 3 HGS Comp. I Beam, 1 HGS Comp. I Beam & Plate Gird.	$250,000 Plans $10	$4,727,000
Schenectady (Int. Trg. Rte. 890)	FIC 61-24	Interstate Rte. Conn. 550 Edison Ave. to Broadway Proj. I-IG-890-5(20)	0.30	Demolition of Buildings	$2,200 Plans $5	39,000
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica, New York						
Hamilton Warren (Rte. 28)	FARC 61-167	Indian Lake-County Line, S.H. 1100 Indian Lake-North River, S.H. 8152 North Creek-North River, S.H. 1515 Proj. F-478(2)	12.24 (2.00 Acc.)	Asph. Conc. Type 1A = 12.24 Mi. Bit. Double Surf. Treat. = 2.00 Mi. Reinf. Conc. Closed Box Bridge Rehabilitate Truss & I Beam Bridge	$285,000 Plans $5	5,222,000
Oneida	M 61-9	Nine Mile Spillway on Erie Canal One Mile North of the Village of Oriskany	....	Rehabilitation of Spillway Misc. Gate & Channel Work	$18,000 Plans $5	335,000
Oneida	U. S. 108	New Gates—Lowering Sills and Lower App. Slab & Misc. Work	....	Lock 20E, Erie Canal, Cary's Corners	5% of Bid Plans $10	Confidential
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington St., Syracuse, New York						
Oswego (Rte. 176)	FARC 61-166	Granby Roads (Bowens Cors. Section) S.H. 653 Proj. S-621(1)	0.04	Asphalt Conc. Corrugated Plate Culvert	$800 Plans $5	15,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe	M 61-16	Rochester: Court Street Dam on Genesee River	....	Cleaning and Painting Sector Gates 3 & 4	$1,400 Plans $5	24,000
DISTRICT No. 5, N. W. KRAPF, District Engineer, 65 Court Street, Buffalo 2, New York						
Erie	FATS 61-18	Buffalo: Kensington Expressway Arterial Highway, Section 1 (East Tupper Street to East Utica Street) Cont. 4 Proj. U-377(23)	1.91	Traffic Signs	$2,000 Plans $5	36,000
Erie	FAC 61-5	Buffalo: Kensington Expressway Arterial Highway Section III (Northland Ave. to Fillmore Ave.) Proj. U-377(21)	0.66	Demolition of Buildings	$6,000 Plans $5	105,000
Niagara (Int. Trg. Rte. 190 Rte. 18D)	NIE 61-5 FINIE 61-4 FARC 61-129	Interstate Route 506, Niagara Expressway-Contract 5 (North Grand Island Bridge to Gill Creek) Porter Ave. Pt. 1, S.H. 1756, Porter Ave. Pt. 2, S.H. 1858 Proj. EI-EIG 190-1(43); S-606(2)	4.99 (5.74 Acc.)	9" Cement Conc. Pavt., 2 @ 24' Var. = 5.93 Mi. Asph. Conc. = 4.68 Mi.; Misc. Work = 0.12 Mi. 5 H.G.S. Comp. I Beam; 2 H.G.S. Comp Plate Girder; 1 R.R.G.S. Comp. I Beam; 1 R.R.G.S. Comp. Plate Girder	$615,000 Plans $10	11,176,000
DISTRICT No. 6, W. J. DENNIS, District Engineer, State Office Building, 30 West Main Street, Hornell, New York						
Allegany (Rte. 408 & 305)	FATC 61-4	Cuba-Friendship, S.H. 5174, Obi-Cuba, S.H. 965 Proj. F-294(3)	....	Traffic Signals	$1,500 Plans $5	26,000
Steuben	FASS 61-15	Hammondsport-South Pulteney, C.R. 76 Proj. S-594(1)	0.55	Asphalt Concrete	$10,000 Plans $5	192,000
DISTRICT No. 7, J. C. NORTON, Acting District Engineer, 444 Van Duzee Street, Watertown, New York						
Lewis (Rte. 12)	P.A. 61-2	Boonville-Port Leyden, Part 2, S.H. 8472	9.23	Grading, Drainage and Misc. Work	$500 Plans $5	9,000
DISTRICT No. 8, M. N. SINACORI, District Engineer, 28 Dutchess Turnpike, P. O. Box 551, Poughkeepsie, New York						
Columbia Rensselaer (Rte. 20)	R.C. 61-158	New Lebanon-Brainard, S.H. 615 Brainard Station, S.H. 5108	6.93	Subsealing Cement Conc. Pavt.	$4,500 Plans $5	82,000
Rockland	FASS 61-16	Little Tor Road (Collyer Ave. to New Hempstead Rd. and Phillips Hill Rd. to South Mountain Rd.) Proj. S-311(2)	2.05	Asphalt Conc. Twin Box Culvert	$32,000 Plans $5	577,000
Westchester (Int. Trg. Rte. 287)	FICWETS 61-2	Interstate Route Conn: 520 Cross Westchester Expressway Proj. I-287-2(29)	10.79	Additional Traffic Signs	$3,000 Plans $5	54,000
DISTRICT No. 9, J. C. FEDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 26)	FARC 61-165	Vestal-Vestal Center-Choconut, S.H. 8331 Proj. F-U-482(5)	1.93	Asphalt Concrete	$88,000 Plans $5	1,602,000
Delaware Broome (Rte. 17)	FARC 61-168	Hales Eddy-Hancock, S.H. 5167 Deposit-Hales Eddy, S.H. 5045 Windsor-Deposit, S.H. 5338 Deposit, S.H. 265 Proj. F-FG-336(18), F-FG 344(30)	6.70 (5.75 Acc.)	9" Cement Pavt., 2 @ 24 Var. = 8.65 Mi.; Asphalt Conc. = 1.25 Mi.; Bituminous Stab. Course = 2.51 Mi. Misc. Work = 0.04 Mi.; 4 H.G.S. Comp. I-Beam; 2 H.G.S. Comp. Welded Plate Gird; 2 Bridges Comp. Welded Plate Gird; 4 RRGS Comp. I Beam; 1 RRGS Prestressed Concrete	$600,000 Plans $10	11,367,000
Delaware Ulster (Rte. 28)	FARC 61-163	Fleischmanns-Margaretville, S.H. 239; Griffin Corners, S.H. 36; Pine Hill-Griffin Corners, S.H. 5177 Proj. F-659(9)	4.27	Asphalt Conc. = 4.22 Mi.; Misc. Work = 0.05 Mi. Composite Plate Girder Bridge; Reinf. Conc. Closed Box Bridge	$123,000 Plans $5	2,251,000
DISTRICT No. 10, A. M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	FAWOBE 61-3 FARC 61-162	Wantagh-Oyster Bay Expressway, North Hempstead Turnpike, S.H. 9018, New Bridge Road, S.H. 546 Proj. U-1110(5), U-541(12)	....	Demolition of Buildings	$1,100 Plans $5	20,000
Nassau	FAWOBETS 61-4	Wantagh-Oyster Bay Expressway, Contract 2A (Hempstead-Farmingdale Turnpike, S.H. 9064 to Old Country Road, C.R. 4) Proj. U-1110(6)	4.47	Traffic Signs and Delineators	$5,500 Plans $5	97,000
Queens	FAVWE 61-5	Van Wyck Expressway Extension, Contract 4 (Northern Boulevard-Long Island Expressway) Proj. U-UG-1085(23)	1.14 (0.66 Acc.)	Cem. Conc. Wearing Surface (St. Slab) 1.51 Mi. Cement Conc. Pavt. = 0.03 Mi.; Asph. Conc. = 0.17 Mi.; Misc. Work = 0.09 Mi.; Viaduct—75 Comp. I Beam; 20 Precast Prestressed Conc.; 2 Comp. Built Up Steel Girders	$650,000 Plans $10	11,802,000
Suffolk	PSC 6638 PSC 7296	Elimination of Grade Crossings of the Long Island Railroad with Various Streets in Babylon Mantauk Division Central Branch Team Yard	3.56 (0.51 Acc.)	Track Relocation, R.R. Station, Signal Tower and Misc. Work = 2.58 Mi.; Cement Conc. Pavt. = 0.43 Mi.; Asph. Conc. = 1.06 Mi. 7 RRGS Plate Gird; 2 RRGS I Beam; 1 Slab Viaduct; 2 Temp. Trestles Wood Bents	$400,000 Plans $10	7,532,000
Suffolk	HSP 61-2	Hecksher State Parkway, Contract 3 (Southern State Parkway to Montauk Highway)	6.68 (2.49 Acc.)	8" Cement Conc. Pavt., 2 @ 37= = 5.44 Mi.; 24" Widening = 1.19 Mi.; Access = 2.49 Mi.; Misc. Work = 0.05 Mi.	$170,000 Plans $5	3,050,000

(Continued on following page)

OFFICIAL PROPOSALS
(Continued from preceding page)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

OFFICIAL PROPOSALS

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the

OFFICIAL PROPOSALS

Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: January 9, 1962*

New York City Housing Authority

ADVERTISEMENT FOR BIDS
DeKALB HOUSES

Sealed proposals will be received by the New York City Housing Authority, 299 Broadway, New York 7, N. Y., until 2:30 P.M., January 9, 1962*, at which time said proposals will be opened and read in Room 312, for:

1. Foundations & general construction
2. Heating & ventilating
3. Electric work
4. Plumbing
5. Elevators

For DeKalb Houses (Project No. NY 5-54): Located in the area bounded generally by Pulaski Street, Stuyvesant Avenue, DeKalb Avenue, and Sumner Avenue, and the easterly portion of the area bounded by DeKalb Avenue, Lewis Avenue, Kosciusko Street, and Sumner Avenue, all as more fully shown and described on the drawings, in the Borough of Brooklyn, City of New York. Consisting of four 15-story buildings, one 14-story, and one 18-story; containing 763 apartments; of reinforced concrete construction.

No prequalification is required for these contracts.

The Authority will welcome inquiries from contractors, which should be directed to the Construction Department, New York City Housing Authority, 299 Broadway, New York 7, N. Y. (DIgby 9-4310, extension 521).

NEW YORK CITY HOUSING AUTHORITY
William Reid, Chairman

*The Authority reserves the right to postpone the bid date.

Bids: January 4, 1962

The Port of New York Authority

NEW YORK INTERNATIONAL AIRPORT
CARGO SERVICE AREA
PAVING AND LIGHTING
CONTRACT NYA-590.015

Sealed proposals for the sale of materials and performance of Work for furnishing and installation of taxiway paving and lighting in the Cargo Service Area at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, January 4, 1962, at which time said proposals will be opened and read in Room No. 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman
New York, December 14, 1961

U. S. Government

FEDERAL OFFICE BUILDING, MIAMI, FLORIDA. On or about December 8, 1961, bidding material for construction of Federal Office Building, Miami, Florida, will be available for distribution to general contractors. Applications from general contractors for not to exceed three sets of drawings and specifications should be filed promptly with the below office and the bidding material will be forwarded as soon as available. Bids will be opened on January 18, 1962. The work will include: construction of sixteen-story building with penthouse and 1-story wing; pile foundations; steel framing and floor decking; concrete slabs; composition roofing. Exterior: aluminum windows, aluminum entrances, pre-cast stone panels, granite, waterproofing. Interior Finishes: marble, vinyl wall covering, aluminum, plaster, acoustical work, ceramic tile, glazed facing tile, resilient tile, brick, hollow metal, vault entrances, wood doors, demountable panel type partitions, movable metal partitions—alternate; heating, ventilation, airconditioning, plumbing, electrical work, and elevators. PHS Clinic facilities. Bituminous paving, concrete pavements, flagpole. Bidding material available at Room 415, 900 Peachtree St., N.E., Atlanta 23, Georgia, or write to: GENERAL SERVICES ADMINISTRATION, 50 Seventh Street, N. E., Atlanta 23, Georgia.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5718) will be received at Placerville, California, until January 23, 1962, for furnishing labor and materials for Reservoirs No. 1 and 7 water treatment stations, El Dorado Distribution System, American River Division, California, Central Valley Project. Location near Placerville, California. Principal items are Schedule No. 1, Lump sum, constructing chlorine-and-alum treatment building and appurtenant structures; Lump sum, furnishing and installing water treatment equipment for Reservoir No. 1 water treatment station. Schedule No. 2, Lump sum, constructing treatment building; Lump sum, furnishing and installing water treatment equipment for Reservoir No. 7 water treatment station; and other work. Completion time 225 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento 11, California; P. O. Box 707, Placerville, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5717) will be received at Denver, Colorado, until 10 a.m., Mountain Standard Time, January 16, 1962, for furnishing labor and materials for Passenger Elevator for Flaming Gorge Dam, Colorado River Storage Project. Location Dutch John, Utah. Principal items are Lump sum—Furnishing and installing in Flaming Gorge Dam, one (1) electrically operated passenger elevator with operating machinery and control equipment; and other work. Completion time 580 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City 10, Utah; Dutch John, Utah; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

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Many contractors depend entirely upon the

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Make sure of them on your next contract.

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DISPLAYED RATE:

The advertising rate is $45.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

JANUARY 4TH ISSUE CLOSES DECEMBER 21ST

UNDISPLAYED RATE:

$2.70 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

• POSITIONS VACANT

Draftsman—experienced reinforcing bar detailer and checker. Permanent position with established steel producer. Submit resume of experience, references, and salary expected. All replies confidential. P-7811, Engineering News-Record.

C.P.A.—Years of experience in construction and taxes. Must be top man for top, steady position. P-7712, Engineering News-Record.

Engineers and Designers—one or two years of experience in water supply, water distribution, sewerage or sewage treatment plant design. Salary commensurate with ability. Address reply with resume to: O'Brien & Gere, Consulting Engineers, 400 East Genesee Street, Syracuse 2, New York.

City of San Jose has openings for: Engineer I. Excellent opportunity for young civil engineers in fast growing municipality. Accredited degree in civil engineering or passage of E.I.T. (Senior students may take examination) Age 21-40, U.S. Citizenship, $517-$646 per month. Out of state examination can be arranged. Apply: Civil Service Department, Room 211, City Hall, 801 North First Street, San Jose, California.

Hydraulic Engineer. To head hydraulic engineering section of Central Engineering Department of large paper company. Power system has six power dams plus storage reservoirs. Experience in preparation of Federal Power Commission applications desirable but not necessary. Apply to Manager of Engineering & Research, Great Northern Paper Company, Millinocket, Maine.

Field Engineer — Permanent position with established Midwest consulting firm for man thoroughly qualified and experienced in all branches of building construction. Moving expenses paid. Electrical or process engineer preferred. Send complete resume to P-7633, Engineering News-Record.

Office Manager and Estimator-Medium size general construction firm Eastern N. Y. S. Send photo and complete resume direct to Machnick Construction Co., Inc. 7 Oxford Rd., Troy, N. Y.

Construction-Superintendent, excavation concrete and related works for large power plant; two years; Caribbean area. P-7921, Engineering News-Record.

Sanitary or Hydraulic Engineer with about five years experience in preliminary engineering and design of sanitary or hydraulic projects. Registration desirable, but not essential. Ability in writing and analysis important. Submit complete resume of education, experience and qualifications, together with salary requirements to P-7938, Engineering News-Record.

Party Chief—Permanent position Southeast Consulting Firm. Highway location, primarily urban. Send complete resume including salary requirements to P-7934, Engineering News-Record.

The Lewistown, Pennsylvania, Municipal Authority has a vacancy in the office of superintendent of its water department. About 7,500 customers. Applications from qualified and experienced water system managers are being accepted. Salary range $7,000 to $8,500. Send detailed application setting forth experience and qualifications to Richard S. Ruble, Chairman, 19 Valley Street, Lewistown, Pennsylvania.

Plant Superintendent—College graduate preferred, but must have had at least 5 years experience as superintendent of a plate steel fabricating shop. Thorough knowledge of all machine operations and all types of welding important. Must be able to plan production for efficient operations and constantly work for lower costs. Plant presently employs approximately 125 men and located in Eastern Pennsylvania. Men with only structural steel experience need not apply. Applicant should supply full background resume and salary. Excellent opportunity for right man. Interested applicants will receive consideration on a confidential basis by replying to P-7988, Engineering News-Record.

DRAFTSMEN and DESIGNERS
For Bridge and Highway Projects
Send resume, references and salary requirements. Draftsmen include samples of recent work.
BROOKHART & TYO
3501 N. Front St. Harrisburg, Pa.

HIGHWAY ENGINEERS
Sr. Designers—at least 5 yrs. experience
Jr. Designers—under 5 yrs. experience
Send resume and salary requirements, or
Phone 516- Wells 8-0600
Lockwood, Kessler & Bartlett, Inc.
One Aerial Way, Syosset, L. I., N. Y.

POSITIONS VACANT

Water Works Engineer: Graduate Engineer preferably with New York P.E. license to take charge of Water and Sewer Division. Opportunity for advancement. Salary open. All fringe benefits including vacation and sick leave, hospitalization, state retirement, social security. Send brief resume of qualifications to F. J. Laverty, Supt. Public Works, City Hall, Ithaca, New York.

Design Civil Engineer, experienced in design of piers, wharfs, docks, etc. State education, experience and all pertinent data. P-7961, Engineering News-Record.

Sanitary, sewage and water treatment design. Designer-Draftsman and Engineer positions available with expanding New York consulting firm. Send resume and salary expected. P-7978, Engineering News-Record.

General Superintendent—For General Contractor in the Hartford, Conn. area. Experienced in all phases of heavy construction and capable of handling 100 men and 100 pieces of equipment on 10 different jobs at the same time. Send photo with complete resume to Thomas Colla, The Thomas Colla Company, 251 Broad St., Manchester, Conn.

Office Manager—For General Contractor in the Hartford, Conn. area. Wide knowledge of general accounting, credits and collections, costs and general office systems required. Excellent opportunity with growing firm. Send photo with complete resume to Thomas Colla, The Thomas Colla Company, 251 Broad St., Manchester, Conn.

Civil or Mechanical Engineers for field surveys and studies of water distribution systems throughout North America. Permanent positions. Excellent opportunity for advancement in small organization. Salary plus profit sharing plan. The Pitometer Associates, 50 Church St., New York 7, N. Y.

Openings for recent Civil Engineer Graduate who desire to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, willing to work in the field, and willing to move. We operate throughout Kansas and adjacent states. Offer excellent opportunity for advancement. Martin K. Eby Construction Co., Inc., P. O. Box 1679, Wichita, Kansas.

Engineer-Manager, Prestressed Concrete Plant, C.E. Must be experienced, competent structural engineer. Submit detailed resume and salary requirements to P-7977, Engineering News-Record.

Civil Engineers, Structural Superintendents and Party Chiefs needed for Minuteman Missile Base construction recently started in South Dakota. Send resume to Peter Kiewit Sons' Co., 1000 Kiewit Plaza, Omaha 31, Nebraska. Equal Opportunity Employer.

DESIGN ENGINEERS

Positions available for men with experience in hydraulic and sanitary engineering. Water supply, sewerage and drainage projects.

Submit experience record, references, date available, age, and salary requirements.

ELSON T. KILLAM ASSOCIATES, INC.,
Hydraulic & Sanitary Engineers
48 ESSEX STREET, MILLBURN, NEW JERSEY

POSITIONS VACANT

Technical Service Engineer—B.S. Degree in Civil Engineering or physical sciences. Applicants should be recent college graduates desiring specialized work in the cement and concrete industry. Medusa Portland Cement Co., Box 5668, Cleveland 1, Ohio.

• POSITIONS WANTED

Construction Supt. Heavy Construction. PW-4482, Engineering News-Record.

General Supt., Proj. Mgr. Hvy. Const. roads, bldgs, bridges, flood control, tunnels, pipelines, sewage disp, Civil, Mech. PW-7787, Engineering News-Record.

Superintendent Excavation—Grading Highway—flood control. Estimating—experience. PW-7959, Engineering News-Record.

Executive Manager. Available immediately. Over thirty years experience all phases heavy and highway construction. PW-7954, Engineering News-Record.

Water Works Engineer, 25, married. Experienced in municipal distribution design and investigation. Desires position in same or similar field. PW-7960, Engineering News-Record.

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ENR-T4

Editorials

Family Shelter Fallacies

THE ENCOURAGEMENT that President Kennedy gave to the idea of building community-type bomb shelters at his recent press conference should now be followed by discouragement of any massive program for family-type shelter construction. The theory that the existence of millions of individual shelters would deter enemy attack is a fallacy. Equally false is the idea that the majority of such shelters would be safe havens, or indeed that enough individual shelters could be built to have an appreciable effect on the casualty figures. Not everyone can afford to build a shelter, and shelters for everyone at government expense are out of the question, financially or administratively.

Although the President declined to offer advice on whether a homeowner should build a shelter or not, Assistant Secretary of Defense, Steuart Pittman, in charge of civil defense, two days later flatly urged construction of home shelters on the part of everyone who can afford it (ENR Dec. 7, p. 21).

Now, every American is probably as willing to build a shelter, if ordered, as he is to bear arms. But he reacts to being urged to build a shelter if he can afford it just about as he would react if it was suggested he arm himself and practice close-order drill if he could spare the time.

Mr. Pittman's efforts to defend and clarify the Administration's position on family shelters leaves it every bit as foggy as it was. The federal government wants no part of them, but thinks they are a grand idea. The unfortunate local governments, which may also want no part of them, are saddled with specifying and inspecting what's built, lest do-it-yourselfers and fly-by-nighters put millions of useless death-traps in the basements and backyards of the nation.

What each individual builds is his own (and his local building department's) business, but it's time the federal government quit its tongue-in-cheek encouragement of family fallout shelters. Its efforts and its tax money can be better employed in locating or building community shelters. They offer the greatest number the best chance of survival. And if their mere presence should by chance help to deter an aggressor from nuclear attack, so much the better.

Imaginative Proposal

CUTTING A SWATH seventeen blocks long through the buildings of midtown New York to provide a pedestrian mall is the impractical suggestion of the New York Chapter of the American Institute of Architects. But having thus brushed the idea aside, we are not so sure. At least one much smaller city, Knoxville, Tenn., has made a spectacular success of a project that has some similar characteristics. Maybe, a big city's difficulties in clearing space for such renewal would be no more than relative.

In Knoxville, an old public market, dating back to the city's beginnings, had occupied an entire block. Stores fronting on the traffic-congested market-bounding streets were inefficient, unattractive shopping spots. With the merchants taking the leadership and the city government cooperating, the market was torn down, the streets closed and a pedestrian mall developed.

The Knoxville merchants not only modernized their store fronts facing the mall, but transformed the back facades of their buildings, constituting mostly truck delivery docks, into supplemental "fronts", with attractive entrances and adjacent parking space.

The pedestrian mall proposed in New York would offer similar improved shopping advantages. Many new store locations would be opened up, and back entrances to existing buildings along Fifth and Sixth avenues (between which the mall would be located) would be possible. And the mall, of course, would constitute a new strip of park. Without doubt it would enhance the attractiveness of the city, as well as the comfort and efficiency of doing business in the area.

Instead of being impractical, the mall proposal for New York could turn out to be the kind of imaginative idea that the city would be foolish to forget too quickly. Visionary it is, but vision is the first step to worthwhile change.

The Other Side of the Coin

SUCH CLICHES as "The conservatism of building officials slows progress in the building industry," or "It takes too long to get approval of construction methods in building codes," got a rare challenge at the recent Building Research Institute conference. Calvin H. Yuill, manager of the fire protection section of the Southwest Research Institute, said that building official conservatism may, at least partly, signify a reaction to irresponsible pressures. Some manufacturers have requested him to substitute less rigorous fire testing methods when their products performed badly; a few even asked him to falsify test data, reports Mr. Yuill. Such actions, rare as they may be, condition any honest building official to go slow on approvals.

Mr. Yuill also pointed out that as performance codes replace specification-type codes, the building official has to become more technically competent merely to evaluate methods and materials. And it takes time for this competence to be developed, or to be supplied by the appointment of more architects and engineers as building officials.

Responsibility for the relatively slow progress in modernizing building codes rests with no single class. But viewing the problem through the building official's eyes helps put it in better perspective.

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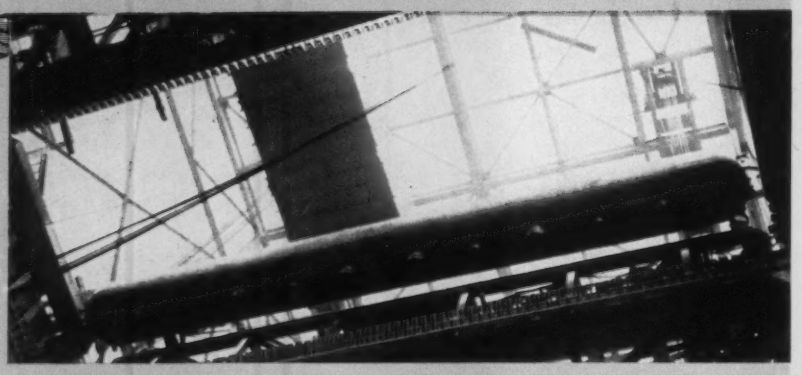

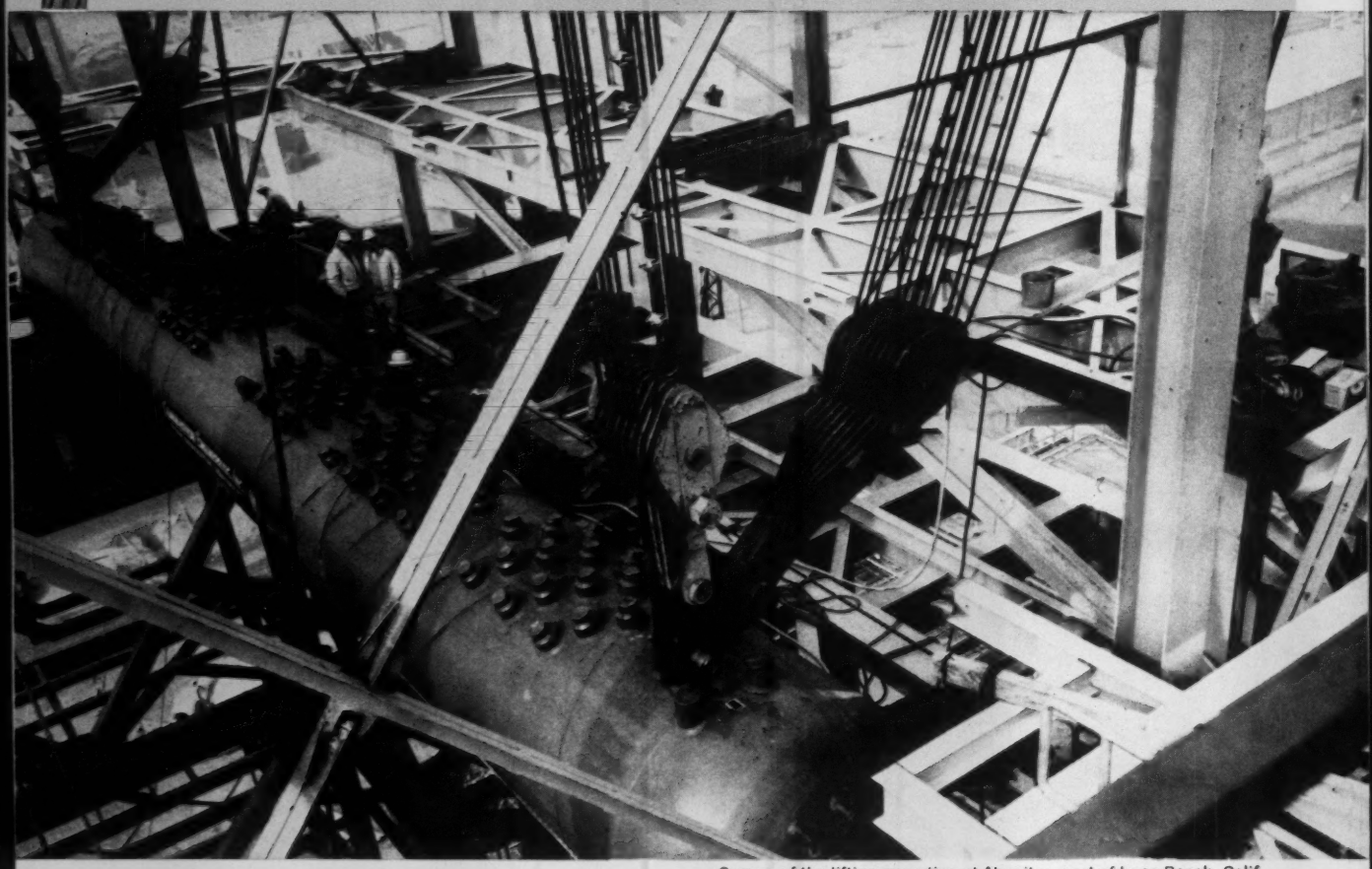

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